

THE INDUSTRY'S RECOGNIZED AUTHORITY

# ROCK PRODUCTS

LARGEST PRODUCER CIRCULATION IN THE HISTORY OF THE FIELD

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Catskill plant of Alpha Portland Cement Co., Cementon, N. Y.

**ANNUAL OUTLOOK-REVIEW  
and Directory Issue**

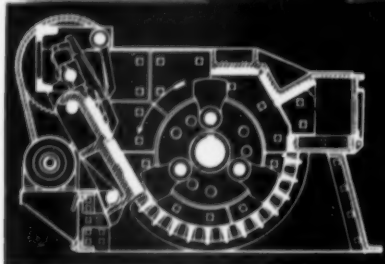
**JANUARY 1956**

**CRUSH  
POWER-SHOVEL-LOADED ROCK  
TO SIZES DOWN TO 3/4"  
IN ONE OPERATION !**



# **WILLIAMS SUPER SLUGGER**

**... CUT CRUSHING COSTS  
AS MUCH AS 50%!  
... REDUCE INVESTMENT  
AS MUCH AS 75%!**



Cross section of Super-Slugger equipped with "Pusher Feeder" non-clog device for maximum feeding of sticky or wet materials through crusher.

A Hammer Mill as powerful, big and rugged as they come! Takes stone as large as 2½ yard dipper can handle and crushes it with power-packed hammer blows to 2", 1¼" or ¾"—even down to feed size for fine grinding—in a single operation! Capacities range up to 550 tons per hour.

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ROCK PRODUCTS, January, 1956

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engineering background**

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Your Link-Belt office will gladly fill in details on how belt conveyors can lower your handling cost per ton-mile. Call today.



Bearings, drives, supports and enclosures as required in this installation are also made by Link-Belt. Availability of all elements from one source saves delays and complications.

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# ROCK PRODUCTS

THE INDUSTRY'S RECOGNIZED AUTHORITY

LARGEST PRODUCER CIRCULATION IN THE HISTORY OF THE FIELD

January 1956



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RESEARCH KEEPS

**B.F. Goodrich**

FIRST IN RUBBER



## Hose used to be more dangerous than snakes

*A typical example of B. F. Goodrich improvement in rubber*

THOSE men are inches away from a high explosive. Heating thick, gooey asphalt to get it out of a tank car takes super-heated steam under terrific pressure, carried into the car through hose.

Heat used to weaken steam hose. Sometimes it burst at the weakest spot, with explosive force, spraying scalding steam in all directions. It was dangerous to workmen and a constant expense.

B. F. Goodrich men believed a hose could be made completely *burstproof*. They designed one with layers of fine

braided steel wire, then layers of a new kind of heat-resisting rubber, inside, outside and between the braids. Not one length of this hose has ever been known to burst. Even if a hose wears out after years of service, steam can leak out but it cannot explode. Workmen are as safe as they are at home.

The B. F. Goodrich hose in the picture had been in use for 2½ years when the picture was taken—far longer than any steam hose used before by this construction company—and showed no sign of wearing out. It not only

stands heat better but wears better. Its rubber cover resists abrasion better than steel. This B. F. Goodrich hose is 30 per cent lighter than steam hose used to be, more flexible, easier to handle.

Call your B. F. Goodrich distributor for more information about steam hose or other hose, belting or other B. F. Goodrich rubber products. *The B. F. Goodrich Co., Department M-532, Akron 18, Ohio.*

**B.F. Goodrich**  
**INDUSTRIAL PRODUCTS**  
**DIVISION**

## CARBIDE INSERT? or MULTI-USE?



**LOCATION:** Palisades Interstate Parkway, Alpine, New Jersey.

**OPERATION CONDITIONS:** Drilling 32-foot holes in abrasive trap rock and bluestone.

### D. Cutrupi & Sons Inc., Fort Lee, New Jersey, speed deep-hole drilling on N. J. parkway job with **TIMKEN®** carbide insert bits

**T**O blast a 35-foot cut for the Palisades Interstate Parkway, D. Cutrupi & Sons Inc., New Jersey contractors, had to drill 32-foot holes through tough, abrasive trap rock and bluestone.

With ordinary bits it was impossible to drill out full increments of drill steel so Cutrupi used Timken® carbide insert bits. Their performance was excellent. Cutrupi was able to maintain a high drilling rate and bit changes were minimized.

Timken carbide insert bits are generally the most economical bits on tough jobs that involve hard or abrasive ground, extremely deep holes, constant gauge holes, or small diameter blast holes.

But they're not the best solution for *all* drilling problems.

For drilling in ordinary ground, Timken multi-use bits are most economical. With correct and controlled reconditioning they give lowest cost per foot of hole if full increments of steel can be drilled.

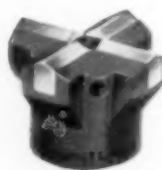
All Timken bits are interchangeable in the same thread series and a wide range of different bits fit the same steel. Thus you can change bits quickly and easily right on the job. All Timken bits are made from our own fine alloy, electric-furnace steel and they have the special shoulder

unions, developed by the Timken Company, that protects the threads from drilling impacts.

To choose the best bit for your drilling jobs, call on the Timken Rock Bit Engineering Service. We've had 20 years of drilling experience. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



Timken threaded  
multi-use rock bit



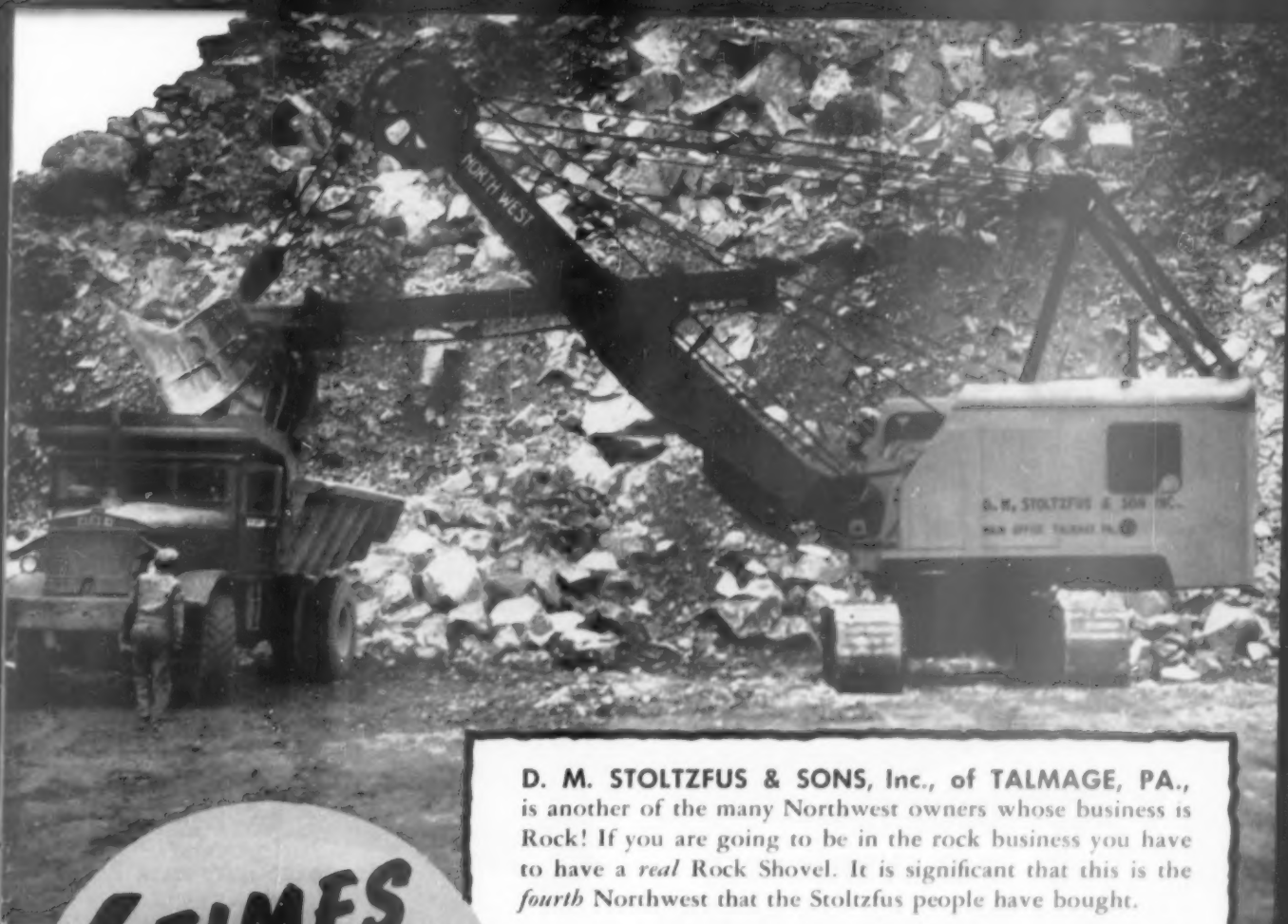
Timken threaded  
carbide insert rock bit

**your best bet  
for the best bit  
... for every job**

# TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.





**4 TIMES  
PROVED  
in ROCK!**

**D. M. STOLTZFUS & SONS, Inc., of TALMAGE, PA.,** is another of the many Northwest owners whose business is Rock! If you are going to be in the rock business you have to have a *real* Rock Shovel. It is significant that this is the *fourth* Northwest that the Stoltzfus people have bought.

Northwest advantages for handling rock are the reasons for the many repeat orders from hard rock men. The Northwest Dual Independent Crowd utilizes force most independent crowd shovels waste. Uniform Pressure Swing Clutches eliminate the jerks and grabs that make spotting difficult. The "Feather-Touch" Clutch Control makes operation easy without resorting to delicate mechanisms, valves or pumps that often require special knowledge for adjustment. The Cushion Clutch eliminates shock overloads before they can reach and damage machinery! These are just a few of the reasons why so many quarries are now using Northwests. We'd like to tell you more! Why not get the *whole* story—a Northwest Man will be glad to call.

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# NORTHWEST

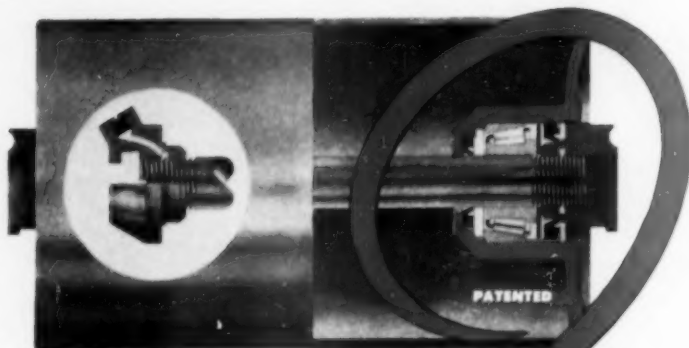
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*Saves Grease!*  
*Saves Labor!*  
*Saves Belts!*



**CGC UNIT-SEALED**  
**CGC PRE-LUBRICATED**  
**CGC TIMKEN BEARINGS**



STANDARD DUTY IDLER

Continental's Unit-Sealed "UST" Conveyor Idlers, incorporating Timken Bearings, Garlock Klosures, are the answer to the operator's prayer.

The Unit Bearing Assemblies—"sealed unto themselves" provide an ample but not excessive grease reservoir. This represents a saving of grease and further eliminates any possible migration of the grease from upper to lower bearings on inclined rolls. The lubricant is a top quality water repellent grease of a stable consistency with a wide temperature range for long life.

Most important—this construction permits operating the Continental "UST" Idler without relubrication for 1-2-3 years depending upon the severity or character of conditions.

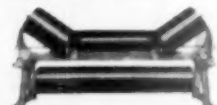
For detailed information on these idlers write  
for Bulletin R. P.-116.



SELF-ALIGNING FLAT BELT IDLER



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**FEATURES**  
**OF THE**  
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## **ASSURE PEAK PRODUCTION AT MINIMUM COST**

The Traylor TC is a gigantic crusher with the proven ability to combine high hourly output with amazing production economies . . . that's why leading producers the world over rely on Traylor TC Gyratory Crushers. All TC Gyratory Crushers have certain exclusive Traylor features in common; for example, Traylor's original, non-chokable Bell Head and Curved Concaves. Curved crushing surfaces apply power as a *direct* force to reduce lifting and churning. Each succeeding zone in the crushing chamber is of greater capacity . . . choking and packing is practically eliminated . . . that's why a TC stands up to the continuous punishment of steady operation. Traylor Curved crushing surfaces wear evenly overall to retain their original shape almost indefinitely.

- Traylor TC Gyratory Crushers are made in 7 sizes with feed openings from 20" to 60". Hourly capacities up to 2860 tons. Power requirements from 150 to 450 H.P.

- For complete details on Traylor TC Gyratory Crushers send for your free copy of Traylor Bulletin #126.



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**Are you losing**

**10% of  
a day's production**

**every time you change  
crusher setting?**

**One-man,  
One-minute  
PRODUCT  
CONTROL**



● On some gyratory crushers, it takes 45 minutes and longer to change setting for different product size — in many instances, it takes hours. But even 45 minutes of downtime represents about 10% of your day. You don't have to put up with this lost production — not if you install the *Hydrocone* crusher, the crusher with one-man, one-minute product control.

With the *Hydrocone* crusher (and *only* with this modern crusher) you can change product size at the flick of a switch. Compensating for wear is accomplished just as easily. And if the *Hydrocone* crusher stops under load, just flick the switch and you're in business again.

Get all the facts about the *Hydrocone* crusher. See your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletin 07B7145B.

A 4931

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## A superior operating record for 15 years with **GULF LUBRICANTS and FUELS** at Superior Stone Company, Red Hill, Va.

For 15 years the trucks, shovels, crushers, and drills at the huge quarry operation of Superior Stone Company have been lubricated and powered with Gulf quality products. During this period equipment has worked continuously and efficiently with no downtime due to difficulties related to the lubricants and fuels.

Ask this progressive firm—and many others in the industry—why they prefer Gulf products and you'll get an answer something like this: "Gulf Lubricants prevent excessive wear, keep maintenance costs at rock bottom levels. Gulf Fuels insure top engine performance because they burn

evenly and completely. And Gulf's cooperative engineering service helps us select the right fuels and lubricants for every unit of equipment."

Perhaps your operation can also benefit from Gulf's quality products and helpful engineering service. Consult the telephone directory for the number of your nearest Gulf office.



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Junior Achievement Week  
January 29-  
February 4, 1956



**THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS**

ROCK PRODUCTS, January, 1956

A PICTURE REPORT OF

# INTERNATIONAL POWER

Boosting job production everywhere

"Tops for stripping overburden," reports Maurice Stein, Superintendent for Elliot Coal Mining Company, Philipsburg, Pennsylvania, of his company's TD-24's. "We've used two for three years now . . . find they give maximum output with very low maintenance. Our operators especially like their ease of handling and good balance. We also like their planetary steering system which lets our operator safely work on steeper terrain." Right now, rigs are removing 40 ft of shale and clay to uncover a 24-inch vein of "C" seam bituminous coal.



**For utility work** around pit or plant, 39½ dhp International 300 can be equipped to do most any task. Here, rig loads and unloads trucks. With other attachments, "300" plows snow, blades roads, loads bulk materials, digs ditches, mows grass, tows trailers. Rig has 10 speeds forward to 16.7 mph, develops 4,379 lbs pull.

**Fast on job, fast between jobs—** Handling all tractor work in a quarry near Denver, Colorado, 200 hp TD-24 saves time by driving from job-to-job at 7.8 mph. Output, 2200 tons of 1¼-inch stone per 8-hour shift, is taken from crusher by International-powered belt conveyor, background, then stockpiled by TD-24. Unit also does all stripping.



**"Ideal for dozing rock,"** says Paul Weaver Supt for Joe Wenke Quarries of this veteran TD-14A. "We use it continuously for shovel and quarry-floor cleanup. Performance has been excellent. Downtime is way down due partly to rugged construc-

tion, partly to prompt parts delivery and service from our International distributor." Quarry, located at Toledo, Iowa, produces 200 tons of 1-inch road stone per hour.



**3000-ft cycle every 3 min** is the record of Western Construction Co.'s "55" Payscraper. This includes time for TD-24 to push-load 10 bank yds of ripped caliche. Payscraper's fast-loading ability makes it ideal for stripping overburden . . . high ratio of horsepower to loaded weight, oversize air brakes speed hauls up and down steep grades. Photo was taken near El Paso, Texas.



**Loader does job too tough for shovel**—In an assignment which dramatically illustrates the tremendous break-out International Drott can bring to bank-loading, Al Pangia's TD-14 rips up a 150-yd concrete filling station driveway in Camden, N. J. Engineers say a  $\frac{3}{4}$ -yd shovel could not have done the work . . . yet TD-14 broke and loaded the slab unassisted.

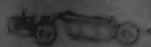
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makes every load a pay load



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**WHEEL TRACTORS**  
3 Models . . . 9 to 50 hp

ALSO: International Drott Loaders . . . International Scrapers, Backing-Dump Wagons . . . and International Superior Pipe-Boom Tractors.

the  
**all new "QUICK-WAY"**

GREATER POWER AND CONTROL FROM BUILT-IN BALANCE



**CONSTANT  
QUIET  
POWER**

*Rugged as the Rockies*

**"QUICK-WAY"- 50**

1/4 Yd. 5 Ton

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3/8 Yd. 8 Ton

**"QUICK-WAY"-100**

1/2 Yd. 10 Ton

**"QUICK-WAY"-125**

1/2 Yd. 12 1/2 Ton

*and . . . Five new "QUICK-WAY" Carriers*

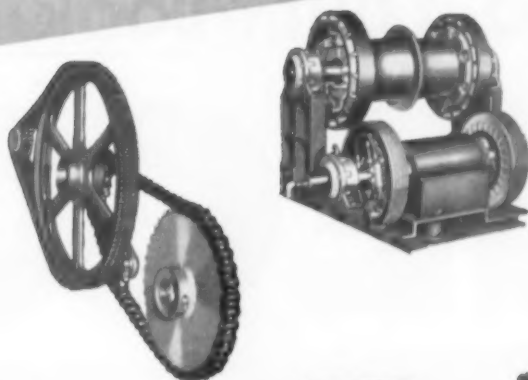
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Machine-cut steel and cast iron sprockets with compact, high-speed, heavy-duty roller chains give positive power, reduced noise, and greater flexibility under every operating condition. Oil and dust tight cases.



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Power up and down boom standard on all models.

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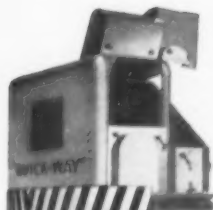
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Please send complete information on the ALL NEW "QUICK-WAY" and the NEW "QUICK-WAY" carriers—check model number or numbers 50 ( ), 80 ( ), 100 ( ), 125 ( ).

Name \_\_\_\_\_

Address \_\_\_\_\_

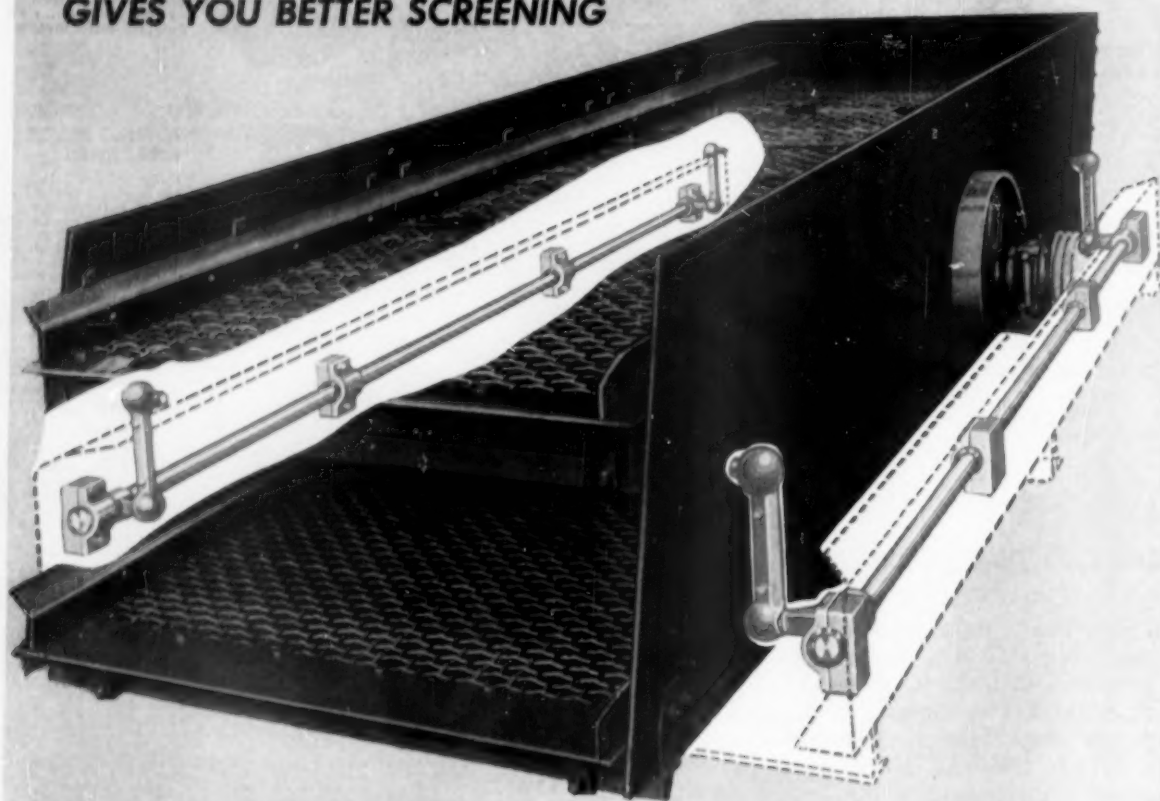
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**SECO "LOOK AHEAD" ENGINEERING  
GIVES YOU BETTER SCREENING**



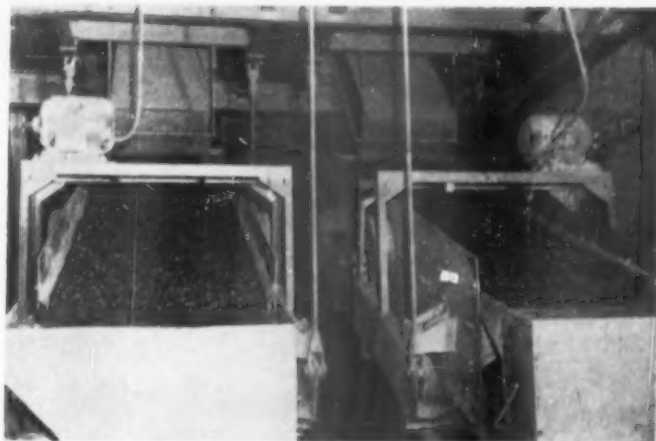
*Seco patented equalizer assembly in outline*

**OVER 350 MODELS IN SINGLE, DOUBLE, TRIPLE & 3½ DECKS**

Year" with long-life

# VIBRATING SCREENS

*Here's Your Key to Years  
of high tonnages accurately  
screened at lowest cost per ton*



(Above Seco Screens on-the-job at Cleveland Slag Co.)

This is a good time to "look ahead." Is your plant set up for really efficient screening when you start the new season? Or will your profit margin be reduced or lost because of low tonnages, excessive shutdowns, or other problems due to your present screens.

Look ahead! Get set now to profit on the immense new long term road building programs now getting under way. Consult Seco now and you will be ready, not only for accurate, trouble-free high tonnage screening this year . . . but for years and years ahead.

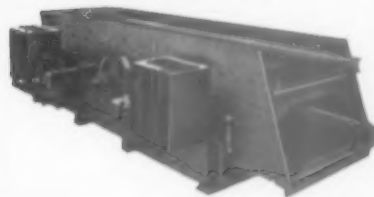
You don't have to take our word for it. Thousands of America's best operators agree "you can't beat Seco for performance."

**SEND FOR NEW SECO CATALOG No. 204**

**NOW! SCREEN MANY  
DAMP, STICKY MATERIALS  
SECO BALL TRAY ATTACHMENT**



**SECO WITH ELECTRIC WIRE  
CLOTH HEATER**



**SECO**  
TRUE CIRCULAR ACTION  
VIBRATING SCREENS

**SCREEN EQUIPMENT CO., INC.**  
Buffalo 25, New York

5

## BIG REASONS WHY ALLIS-CHALMERS

# move more dirt at

Watch an Allis-Chalmers scraper at work and you'll see that it loads bigger — travels and maneuvers more easily — puts more dirt right where you want it with the least tractor effort. Check features and you'll understand why an Allis-Chalmers scraper is able to outperform others. Then compare prices and you'll see that it gives you more scraper capacity per dollar — more for your money in every way.

*S*

**TRIPPING AND RECLAIMING IN ONE OPERATION.** This Allis-Chalmers Model 315 Scraper strips overburden, then deposits and spreads it in a worked-out area of the pit. It has a struck capacity of 15 cu yd (19 cu yd heaped) and incorporates all the job-proved advantages found in other Allis-Chalmers scrapers, 2 to 19 heaped capacities.

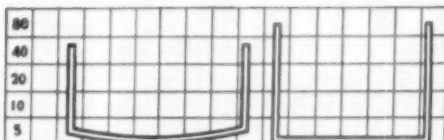


# SCRAPERS

## lower cost

ALLIS-CHALMERS

OTHER



2

### LESS LOADING RESISTANCE

Low, wide bowl plays an important part in ease of loading. Since loading resistance is largely determined by the height to which the load is built, the lower, wider bowl of an Allis-Chalmers scraper requires less time and power to get the same yardage as other scrapers.

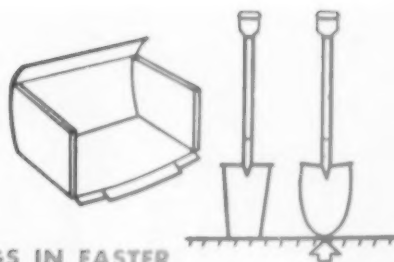


4

### POSITIVE EJECTION ASSURES EVEN SPREADING

With patented linkage, apron lifts, then moves forward and up as ejector pushes forward. High apron lift prevents any possibility of material's jamming. Even when loaded from overhead, anything that can be put into the bowl can be easily ejected. Ejector returns to loading position automatically by spring action and apron weight.

There is an Allis-Chalmers pull-type scraper for every tractor . . . every job. Write for literature or contact your Allis-Chalmers dealer.

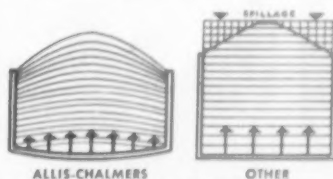


1

### DIGS IN FASTER

Curved and offset cutting edge on Allis-Chalmers scrapers concentrate all the tractor horsepower on the center section during initial penetration. The penetrating ability of a round-end spade helps illustrate the soundness of this Allis-Chalmers design.

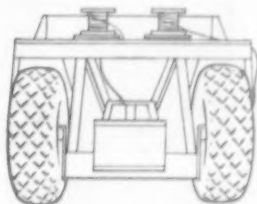
Diagrams show how an automatically heaped load avoids costly spillage even though the center is built up above the sides of the bowl.



3

### HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the curved bowl "boils" forward, to the rear and to the sides, pulverizing the dirt, filling the voids and producing an automatically heaped load without excessive spillage.



5

### HAULS, MANEUVERS EASILY

Big, low-pressure tires provide maximum flotation. The extra wide, low bowl keeps center of gravity low, helps the scraper hug the ground for safety. Front running gear has ample clearance at all points, high carrying position clears uneven ground.

Scraper main frame is shorter because exclusive linkage moves apron forward as well as upward to clear main frame at full height. The two-to-three feet shorter wheel base permits easier maneuvering. Scraper can turn in its own length.

CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

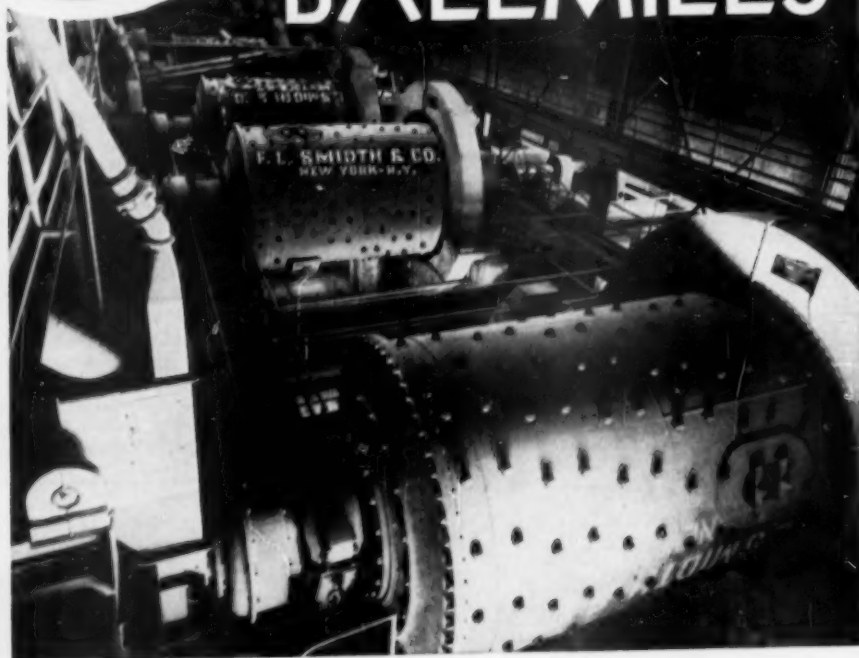
# ALLIS-CHALMERS





# SMIDTH

## BALLMILLS



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# What's Happening

---

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

January, 1956

**A New Haven Superior Court** has refused to issue a temporary injunction which would prevent Connecticut's State Highway Commissioner from awarding a contested turnpike-paving contract. The injunction suit was the result of a controversy over portland-cement concrete and bituminous concrete as the paving surfaces for the Connecticut Turnpike. A bituminous concrete paving firm submitted the low bid for a 3-mile turnpike section, but the Highway Commissioner awarded the contract to a higher-bid portland-cement concrete paving firm.

**The Interior Department's Bureau of Reclamation** expects to invite bids on about \$51,000,000 of construction contracts by June, 1956. New projects on which bids are being invited include work on the Palo Verde diversion project, Arizona and California; Missouri River Basin project, Wyoming and Montana; Provo River project, Utah; Deschutes project, Oregon; Yakima project, Washington; Santa Maria project, California; Central Valley project, California; and Michaud Flats project, Idaho.

**New York City's traffic and transportation problems** may be solved according to Henry K. Norton, chairman of the New York, Susquehanna and Western railroad. He has developed a plan for an "Aerial Transit" system calling for rubber-tired cars traveling at 60 m.p.h. on overhead concrete runways. A central loop would be located in Manhattan, with connecting lines leading into other parts of the city and suburbs.

**"Do it yourself" boxes** of real holly with artificial berries, made of plaster of paris painted bright red, were shipped by the Washington Holly Growers Association in an attempt to salvage some of a damaged holly crop. A record November cold spell froze the berries off most of the trees in the Pacific Northwest, resulting in a shipment of only 15 percent of the usual 1.5 million pound harvest for the holiday season.

**The earth may be headed for a new ice age** in 10,000 years, according to Cesare Emiliani of the University of Chicago. Using analyses of oxygen-16 and oxygen-18 content of fossil shells, he estimates the earth is already in its 6000th year of its 16th cyclical cold spell in the past 600,000 years. A smaller ratio of oxygen-18 in fossils from sea-bottom cores indicates warmer weather at the time of formation.

**Contract awards** for the 37 states east of the Rockies totaled \$20,027,736,000, for the first 10 months of 1955, up 22 percent. Nonresidential contracts were \$7,107,396,000, up 20 percent, residential, \$8,748,341,000, up 24 percent, and utilities and public works totaled \$4,171,999,000, up 20 percent, for the first 10 months of 1955.

**A member of the A.F. of L. Bricklayers Union** has been suspended indefinitely from membership because he refused to pay a \$50 fine imposed on him by the union for using his invention—a device which he claims saves considerable time in laying brick. The device consists of a set of calibrated jigs made of airplane metal which eliminated the need for resetting plumb lines and spirit levels every time a new row of bricks is started in home construction. Using his device, Jerry Strayer of Maumee, Ohio, claims he can lay 1000 bricks in seven hours, when the normal output for a skilled bricklayer is between 600 and 800 brick in eight hours.

**The Interstate Commerce Commission** announced recently that it has authorized the railroads to continue in effect the 15 percent freight rate increases which it granted in 1951 and 1952 and scheduled to expire December 31. The railroads estimated that at the present rate of net railway operating income, the rate of return on current net investments would have dropped to 1.56 percent if the temporary rate of increase had not been made permanent.

**Monazite**, a rare phosphate containing substantial amounts of cerium and thorium, has been discovered in New Jersey, in rock samples from Morris County. The monazite belt stretches along a ridge of hills for more than two miles, intersecting at least four small streams. Width and depth of the occurrence have not yet been determined. Specific sites cannot be revealed by the state unless the initial discoverer has given consent.

**Five boxes of 50 detonating caps** were recently stolen from a Kentucky quarry. A board in the floor of the storage house had been pried up, making a hole  $8\frac{1}{2} \times 15$  in., indicating that a very small person had entered. A 500-ft. roll of wire used in setting up quarry blasts was also stolen.

**The Indianapolis Toll Road** will be built of concrete throughout its 156-mile length, according to Albert J. Wedeking, Toll Road Commission director. Earlier reports held that a shortage of portland cement might force use of blacktop for the western two-thirds.

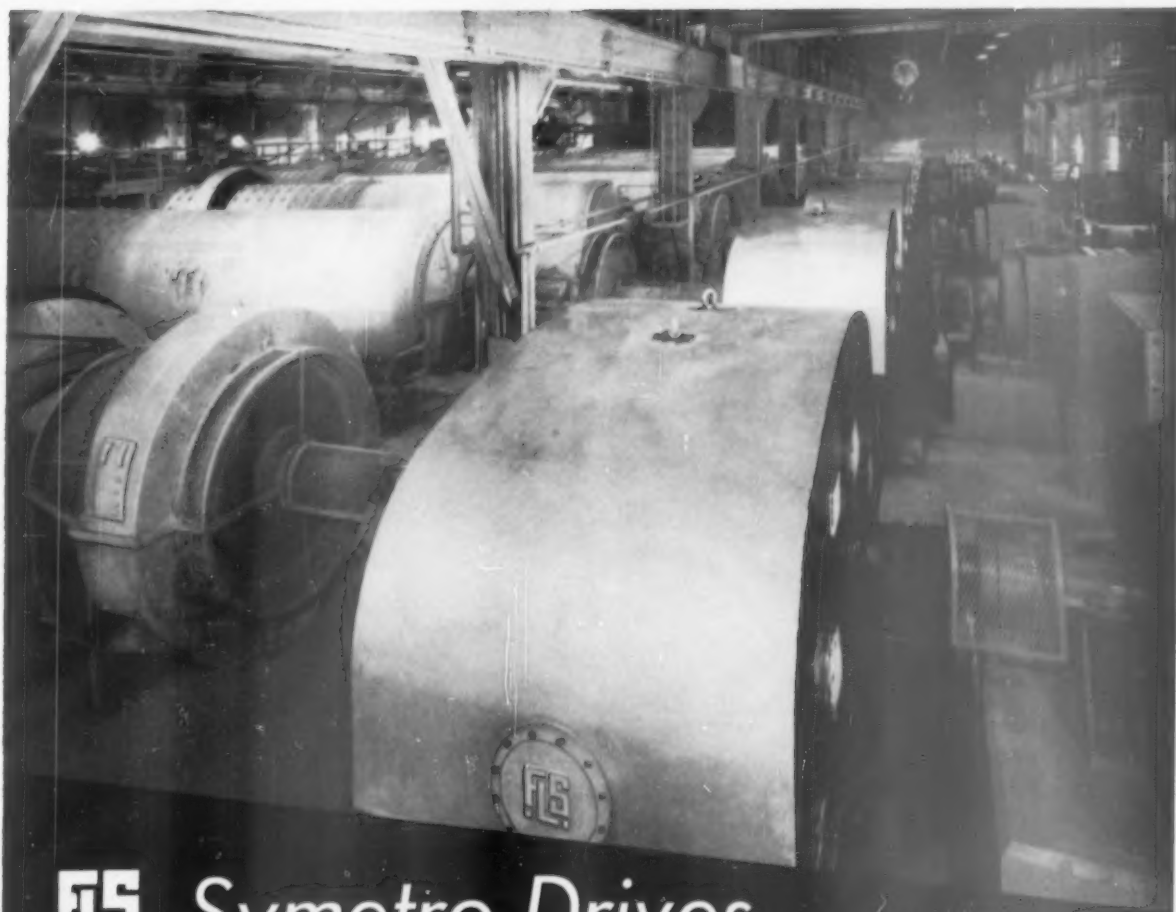
**Heavy construction awards**, nationally, totaled \$17,307,596,000 for the first 48 weeks of 1955, an increase of 30 percent above 1954, and 17 percent higher than the previous record, set in 1952, as reported in **Engineering News-Record**.

**Lime**, used in marking out football fields, is said to have been responsible for "burns" suffered by high school football players in three states; Massachusetts, New Hampshire, and Ohio.

**Approximately \$62.5 million** in federal funds have been allocated for airport construction by the Department of Commerce. The funds are available for distribution until July 1, 1956.

THE EDITORS



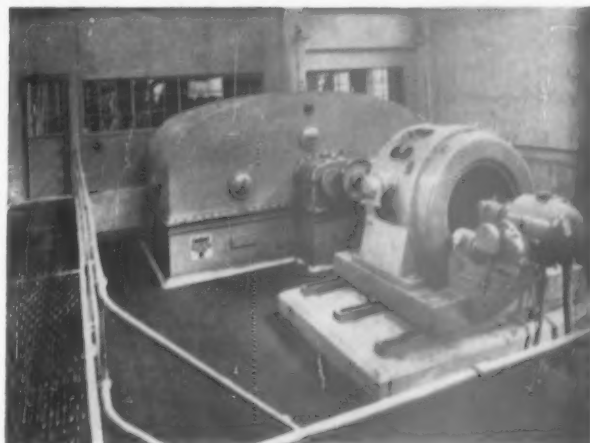


## Symetro Drives

Years of continuous, reliable performance at highest efficiency and negligible maintenance.

Over 7500 HP transmitted through Symetro gears direct to trunnions of raw mills in cement plant illustrated above.

Driving station for large clinker mill showing motor and Symetro gear in separate enclosure (right).



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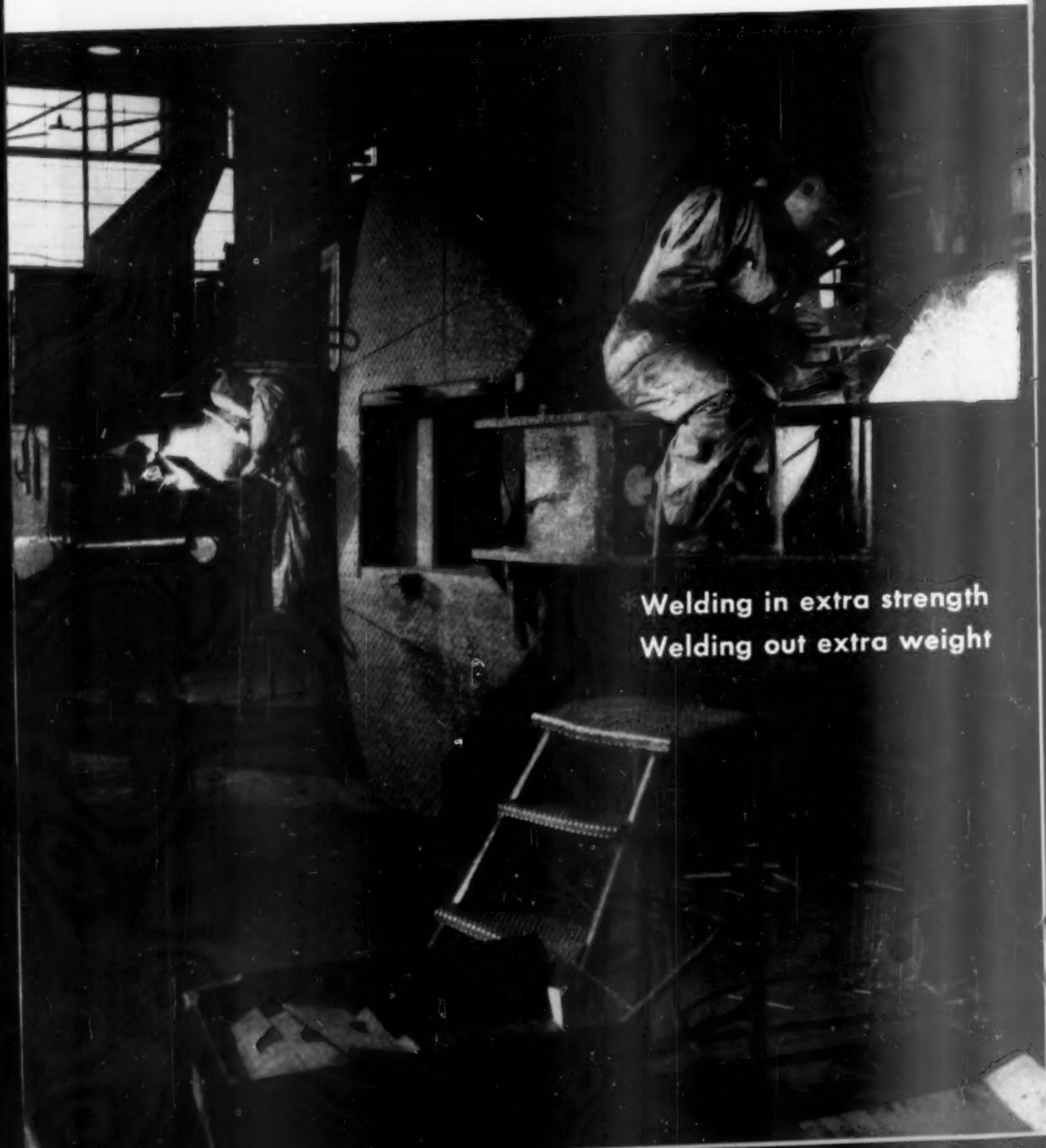
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# what puts more guts in



Welding in extra strength  
Welding out extra weight

# P&H power shovels?

## \*ALL-WELDED CONSTRUCTION

P&H engineers were first to discover that the way to put more guts in excavating equipment was to throw out old-fashioned methods and replace them with modern materials and processes.

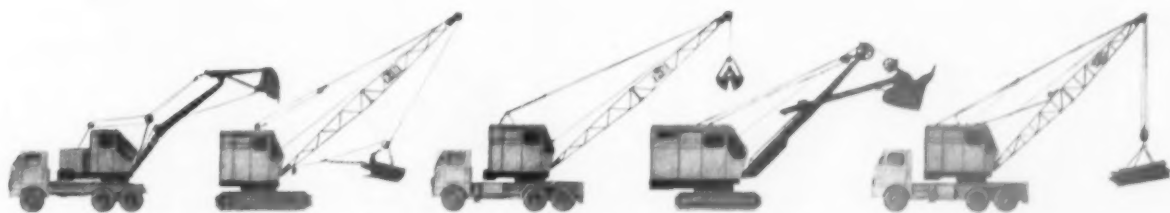
That meant welding in extra strength. Getting rid of useless weight.

Castings that added useless weight were replaced with weldments of new, high tensile steels and rolled sections. Gussets, stiffeners and reinforcing plates were added for extra strength. Welding these into one rigid unit is the way

P&H puts guts in every ounce of steel.

Years of actual service have proved the value of P&H modern engineering. Shovel users everywhere have demonstrated their acceptance by making P&H the largest manufacturer of power shovels and cranes in the business.

Your P&H dealer will be glad to point out, feature by feature, how P&H puts more guts in power cranes and shovels with all-welded construction. Also, in other ways. Harnischfeger Corporation, Milwaukee 46, Wisconsin.



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*the* **P&H** *Line*



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WELDING EQUIPMENT



OVERHEAD CRANE

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# UNIFORM PERFORMANCE

## in Rotary Kiln-Firing Service

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To get consistent delivery of coal of uniform fineness to burners, at closely controlled, constant rates, even after years of operation in kiln-firing service.

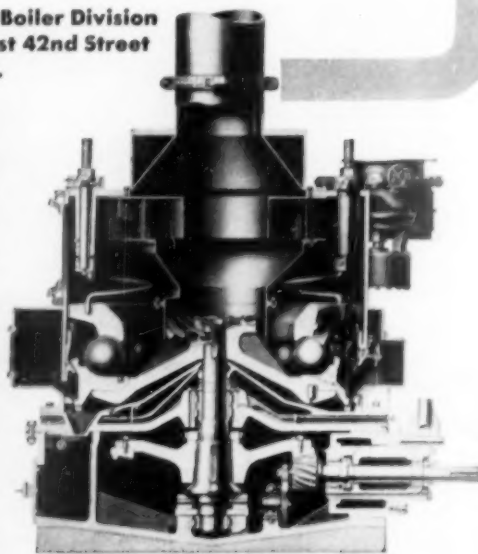
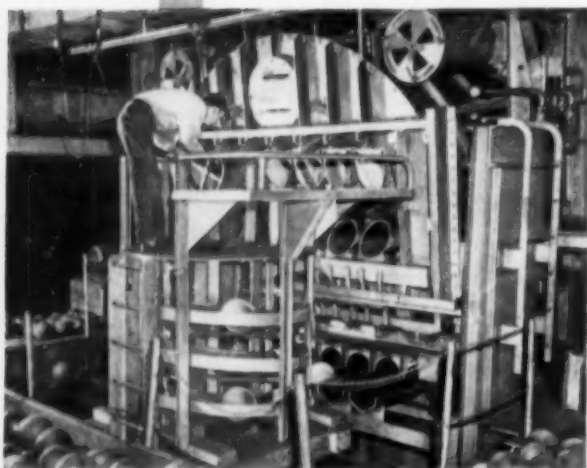
**SOLUTION —**

The use of long-life, wear-resistant parts, such as the grinding balls of B&W Type EL Pulverizers, which are forged of specially selected steels and are then scientifically heat-treated in furnaces like the one shown. Finished balls also are held to close spherical tolerances.

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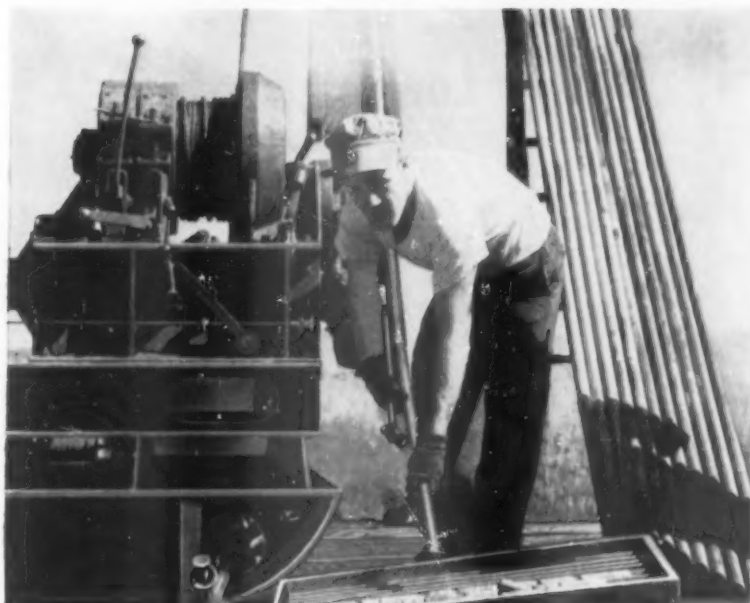
**The Babcock & Wilcox Company, Boiler Division**  
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Supplementing our well-known line of heavy-duty machines for large-diameter and deep-hole drilling we now offer two light-weight high-speed core drilling machines suitable for either Skid, Trailer or Truck mounting. Both models can be powered by either gasoline or diesel engines and air or electric motors. Easily moved from one location to another, they can also be relied upon to produce good smooth cores rapidly at minimum expense.

Standard single-pole derrick permits pulling rods or casing up to 10-ft. lengths

Modern simplified design includes convenient controls, machine-cut alloy-steel gears, anti-friction bearings and other improved features to assure low-cost trouble-free operation. Write for illustrated leaflets containing complete descriptions and working data.



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Complete drilling rigs, mounted on 4-wheel-drive trucks with capacity for carrying accessory equipment and supplies.

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for easy portability without tying up a truck,



#### SKID MOUNTED

for jobs not easily accessible by truck or trailer. Wide structural-steel base and low center of gravity provide ample stability.



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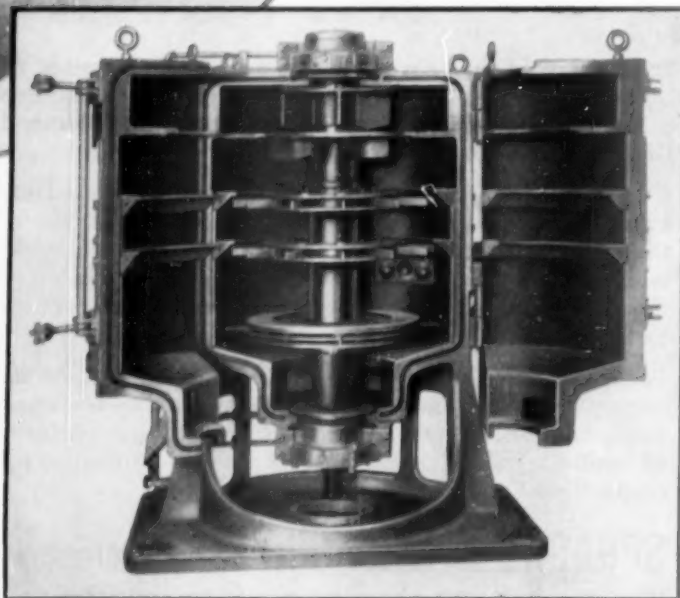
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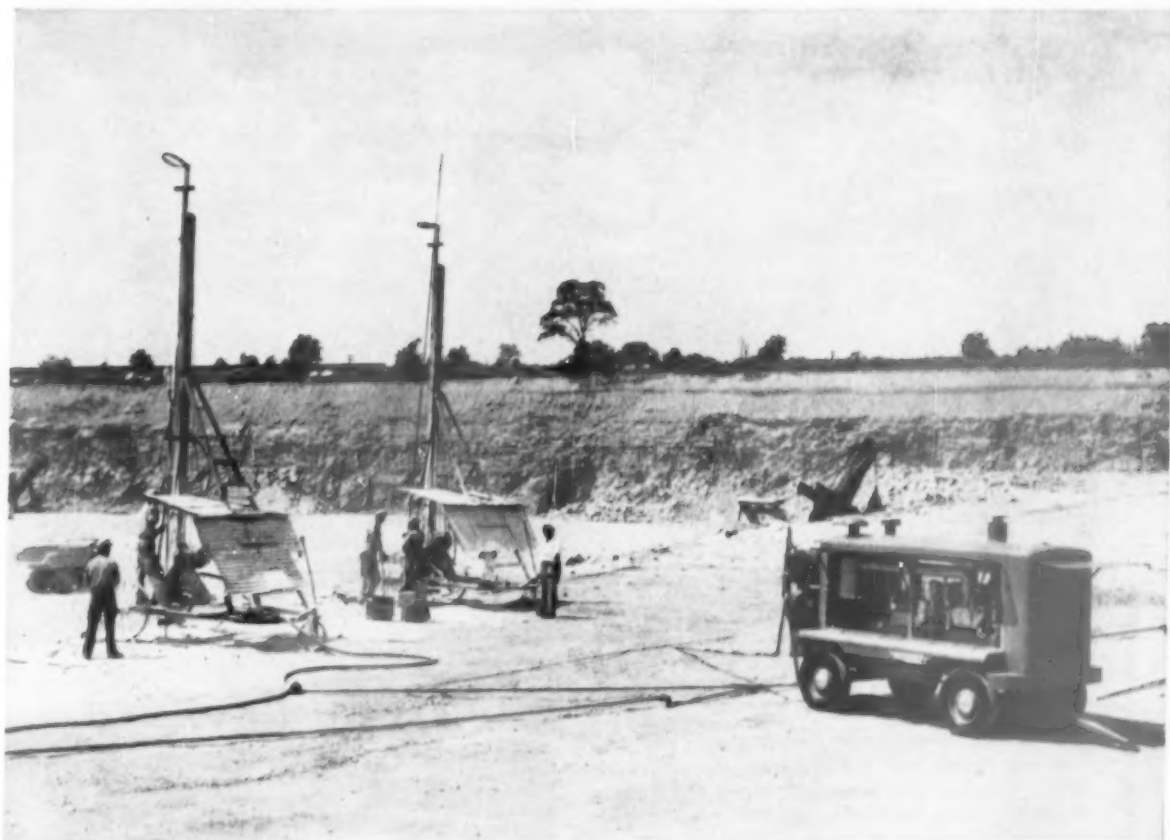
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Original feed to plant consists of rock and sand from old stream bed. The maximum size of crusher feed is 6 inches. After subsequent sizing and crushing to specifications, the Denver Rod Mill grinds a minus  $\frac{3}{8}$ " product to fine sand for use in ready mix concrete.

Previously the minus  $\frac{3}{8}$ " + 10 mesh fraction was a waste product sold as fill for house construction. With the Denver Rod Mill this fraction is now converted to a useable sand product. The increase in value of this feed to the Denver Rod Mill, taken out as sand, is now estimated at \$1.60/ton, or \$159.60 per day. Feed to the Denver Rod Mill is approximately 12T/HR. The plant operates at approximately 50T/HR.

If you have a size or separation problem in meeting your aggregate requirements, consult us without cost or obligation. Perhaps we can help you solve your problem and increase profits.

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happier, healthier and wealthier*

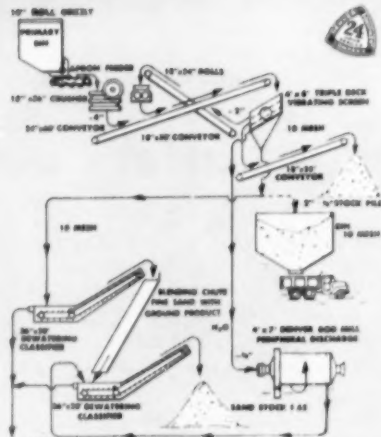


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Flow sheet shows installation of 4' x 7' Denver Rod Mill which grinds minus  $\frac{3}{8}$ " fraction to fine sand at a saving of \$1.60/T.



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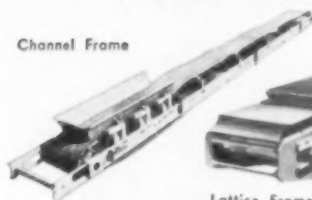
# Whatever your material-moving job



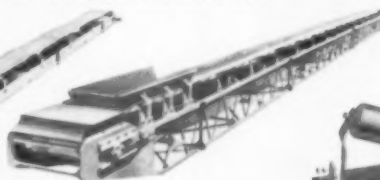
A Universal radial stacker installation for stockpiling.

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Lattice Frame



Triple troughing roll with self cleaning mounting and self aligning, sealed for life bearings



Universal Portable Conveyor with hydraulic hoist



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Asphaltum	.....
Ashes, Dry	.....
Ashes, Wet	.....
Bauxite, Crushed	.....
Borax	.....
Brick	.....
Cement, Portland	.....
Cement, Clinker	.....
Cinders	.....
Clay	.....
Coal	.....
Coke	.....
Concrete	.....
Coral Rock	.....
Cullet, Crushed	.....
Dolomite	.....
Earth	.....
Feldspar	.....
Flourspar	.....
Fullers Earth	.....
Glass, Crushed	.....
Granite, Crushed	.....
Gravel	.....
Gypsum, Crushed	.....
*For weight	

SHOWN HERE ACTUAL SIZE

## SMITH ENGINEERING WORKS

508 E. CAPITOL DRIVE

Representatives in Principal Cities in All Parts of the World

MILWAUKEE 1, WISCONSIN

Cable Address: Sengworks, Milwaukee

# ... this **NEW BOOK** is yours for the asking

124  
PAGE

For the first time—in one handy, quick-reference manual—what every aggregate producer wants to know—from **Abrasion Tests on Rocks to Weir Tables**.

A 124-page, complete collection of fundamental facts and engineering data, tables and charts, assembled from various authoritative sources. Now you don't have to go through a lot of different books to get the facts you need. They're all right here, where you can find 'em—fast—in the most helpful aggregate handbook you can get anywhere.

**PARTIAL LIST OF CONTENTS:** Aggregate Requirements • Aggregate Specifications • Aggregate Required for Concrete • Crusher Specifications • Crusher Capacities and Horsepower Requirements • Screen Analyses of Crusher Products • Belt Conveyor Information • Batch Weights for Mass Concrete • Conversion Tables • Feeders • Power Drag Scraper Information • Pump and Water Information • Physical Properties of Rocks • Rod Mills • Shovel Capacities • Screen Cloth • Screen Capacity Tables • Sand Classifiers • Storage Capacity Curves • V-Belt Drive Information • Weights and Measures

## HERE'S HOW TO GET THIS BOOK

Call at the Smith Engineering Works Booth at the Sand and Gravel or the Crushed Stone Association Convention, at Chicago in February—sign a card and your free copy will be mailed to you...or, a request to Smith Engineering Works, Milwaukee 1, Wis., on your letterhead, stating your position, will bring you a copy with the compliments of TelSmith.

### WEIGHTS OF MATERIALS

Material	Average Wt. lbs. Per Cu. Ft.
Hemlock	210
Iron Ore	210
Limestone	210
Kaolin	210
Lime	210
Limestone	210
Magnesium	210
Manganese	210
Mud	210
Phosphate	210
Quartz	210
Sand	210
Shale	210
Slate	210
Stone	210
Steel	210
Timber	210
Water	210
Wool	210
Yarn	210

### TESTS USED TO DETERMINE PHYSICAL PROPERTIES OF ROCK

#### Compressive Strength

1. Sample—cylinder of rock 2" high and 2" dia.
2. Cylinder of rock is placed between a special head of a suitable universal testing machine.
3. Unit crushing strength is calculated in lbs.

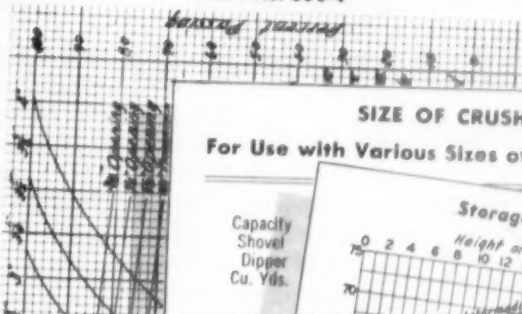
#### Specific Gravity Test

1. Size of sample—5 kg. of plus 1/4" aggregate.
2. Wash to remove dust—then dry at 110°C.
3. Immerse in 15 to 25 C water for 24 hrs. a
4. Determine weight of sample in water (C).
5. Dry again @ 110°C temp. and weigh (A).

$$\text{Bulk specific gravity} = \frac{A}{B-C}$$

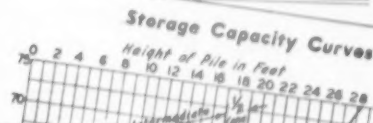
### SCREEN ANALYSIS OF PRODUCT FROM TELSMITH No. 66 GYRASPHERE CRUSHER

Chart No. 65C-4



### SIZE OF CRUSHER

For Use with Various Sizes of Shovel Dippers



### CAPACITIES — SPECIFICATIONS — REVERSIBLE HAMMERMILLS

(Note 3)

Size of Feed	Max.	Net	Drive	Electric	Capacity Tons Per Hour of Product (Note 2)
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### AGGREGATES REQUIRED FOR ONE (1) CUBIC YARD OF MASS CONCRETE

Machine Size No.	Cement	Sand	Coarse Aggregate	Kind of Coarse Aggregate	Cement Lbs. Per Cu. Yd. of Concrete	Sand	Coarse Aggregate	Total Sand and Coarse Aggregate	Approx. Wt. Per Cu. Yd. in place tons
C-1 -24	1	1	2	Gravel	869	36	71	1.07	1.8
C-2 -24	1	1	2	Cr. Stone	902	37	74	1.14	1.9
C-3 -24	1	1	2	Gravel	686	41	82	1.23	1.9
C-4 -30	1	1 1/2	3	Cr. Stone	687	43	86	1.29	1.9
C-5 -30	1	1 1/2	3	Gravel	687	43	86	1.29	1.9
C-7 -36	1	1 1/2	3	Cr. Stone	687	43	86	1.29	1.9
C-9 -36	1	1 1/2	3	Gravel	687	43	86	1.29	1.9
C-100-42	1	1 1/2	3	Cr. Stone	687	43	86	1.29	1.9
C-102-42	1	1 1/2	3	Gravel	687	43	86	1.29	1.9

# In New Jersey... And the World Over BUCYRUS-ERIE WARD LEONARD ELECTRIC SHOVELS Help Put The Lid On Rising Costs



A Bucyrus-Erie 110-B shovel loads blasted rock in a New Jersey quarry.

In every design and construction feature Bucyrus-Erie Ward Leonard electric shovels are built to save you money. They have the capacity and performance ability to deliver high output at an economical cost per yard.

Modern front-end design eliminates dead weight, lets power work effectively swinging payloads. Boom strength is greatest where it's needed most to withstand digging and swinging stresses. Ward Leonard control results in fast acceleration and deceleration, provides extra torque and ample usable power. Heavy-duty construction keeps maintenance costs down and adds years to machine life.

All over the world—in mines, in quarries, and on big construction projects—Bucyrus-

Erie Ward Leonard electric shovels are being used to handle the toughest digging and loading assignments. Those who use them know that Bucyrus-Eries, with their fast operating cycles and durable construction, provide the dependable high-output and low-cost performance that means profitable operation.

63155

## BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

### 75 Years of Service to Men Who Shape the Earth







## YOUR WICKWIRE ROPE DISTRIBUTOR SUPPLIES THE ANSWERS TO WIRE ROPE PROBLEMS

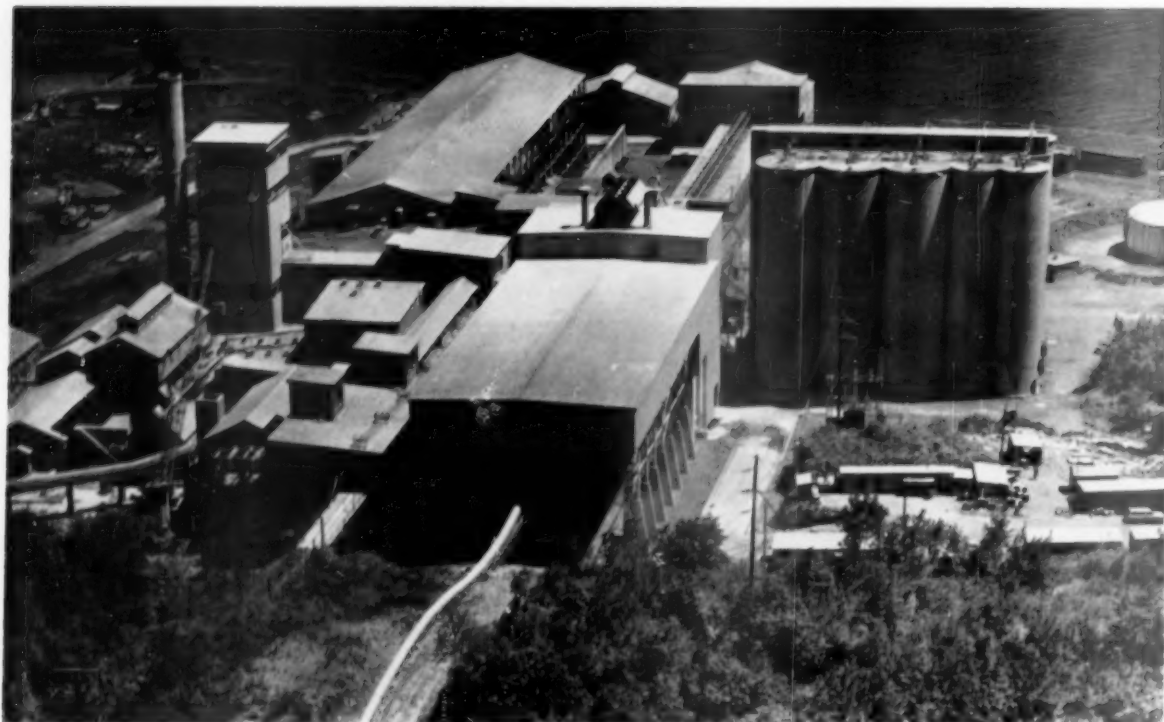
One of the best ways to find out "what goes" is to be right on the spot. That's why a Wickwire distributor is a wire rope expert—he practically lives with the industries he supplies with wire rope. He knows his customers' specialized problems from first-hand experience, and is able to give competent practical advice on the best construction—6x19, 6x37, 8x19, etc.—for them to use. And he delivers the type, size and length of wire rope they need directly from his warehouse stocks. They save time . . . storage space . . . paper work.

Your Wickwire Rope distributor is a good man to know. He's quality people handling quality products. Buy your wire rope and wire rope slings from him. You'll find that the many valuable services he offers far outweigh any apparent price advantage you might gain by buying direct.



A PRODUCT OF THE COLORADO FUEL AND IRON CORPORATION

# *Rip Van Winkle Slept Here* ... but We Didn't



● Modernizing and enlarging the Catskill plant of the Alpha Portland Cement Company was a challenging job, complicated by the age of the plant (1909), space limitations, the integration of new processing units into established circuits, and power utilization problems.

● The two-year project, costing over \$5-million, has increased the plant's capacity by a third or more. Major features include a new kiln with suspension preheater, conversion of the finishing mill to two-stage grinding, complete renovation of the electrical system, new crushing and screening plants, new conveying and stone storage facilities, an enlarged raw mill building, and a new capacity-doubling raw grinding circuit.

*For design and construction of your new plant or extensions,  
contact us at any of our offices*

## **MACDONALD ENGINEERING CO.**

*Construction Engineers*

2349 Yonge Street  
Toronto 2, Ontario

22 West Madison Street  
Chicago 2, Illinois

885 Bryant Street  
San Francisco 3, Calif.



This mammoth new gear hobbing machine, now in operation at Illinois Gear, is the most accurate and largest machine in existence for fast precision hobbing of BIG gears. Equipped with 12" x 15" ground hobs, the largest ever made, it does precision work on blanks up to 100,000 lbs. and 134 inch diameter, 3½ inch C.P. and 54 inch face. Spur, helical and worm gears can be cut to spacing tolerances as low as .0003 inch.

Whatever your needs, you'll find the right machine and tool for your job at Illinois Gear.

# BIG HOBBERS for ILLINOIS GEAR

Look for this mark  ... the symbol on finer gears



*Gears for Every Purpose ... one gear or 10,000 or more*

## ILLINOIS GEAR & MACHINE COMPANY

2108 NORTH NATCHEZ AVENUE • CHICAGO 35, ILLINOIS

# Withstands far greater **SHOCK LOADS** than any standard V-belt

Here are the interesting reasons why Gates Super Vulco Ropes stand up months, even years longer than any standard V-belts...

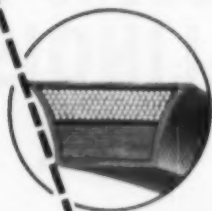
**1. Super-Strength Cords** provide 40% greater horsepower capacity... easily absorb heavy shock loads. **2. Flex-Weave Cover** (U.S. Pat. No. 2519590) provides greater flexibility with far less stress on the fabric. Cover wears longer — increases belt life, lowers belt costs.

**3. Concave Sidewalls** (U.S. Pat. No. 1813698) provides sure pulling power, longer wear because sides straighten out as belt bends—make even contact with sheave walls.



Straight-sided belts bulge out when bent around sheave

Uneven contact causes uneven wear.



SHOCK LOAD of this big jaw crusher at Canadian Quarries, Ltd. is absorbed by Gates Super Vulco Rope Drive. Wherever shock load is severe, Gates Super Vulco Ropes cushion the shock—keep machinery replacement cost down.

## 4 other outstanding advantages

**Resists Oil, Heat and Weather:** Long life is assured even in the presence of excessive oil... even under prolonged exposure to heat and weather.

**Provides Static Safety:** The high electrical conductivity of Gates Super Vulco Ropes provide safer drives in explosive atmosphere.

**Has Little Stretch When Wet:** Low moisture absorption eliminates need for special take-up in wet locations.

**Saves Space:** Higher horsepower rating and greater resiliency may permit fewer belts, or smaller sheaves where space saving is vitally important.

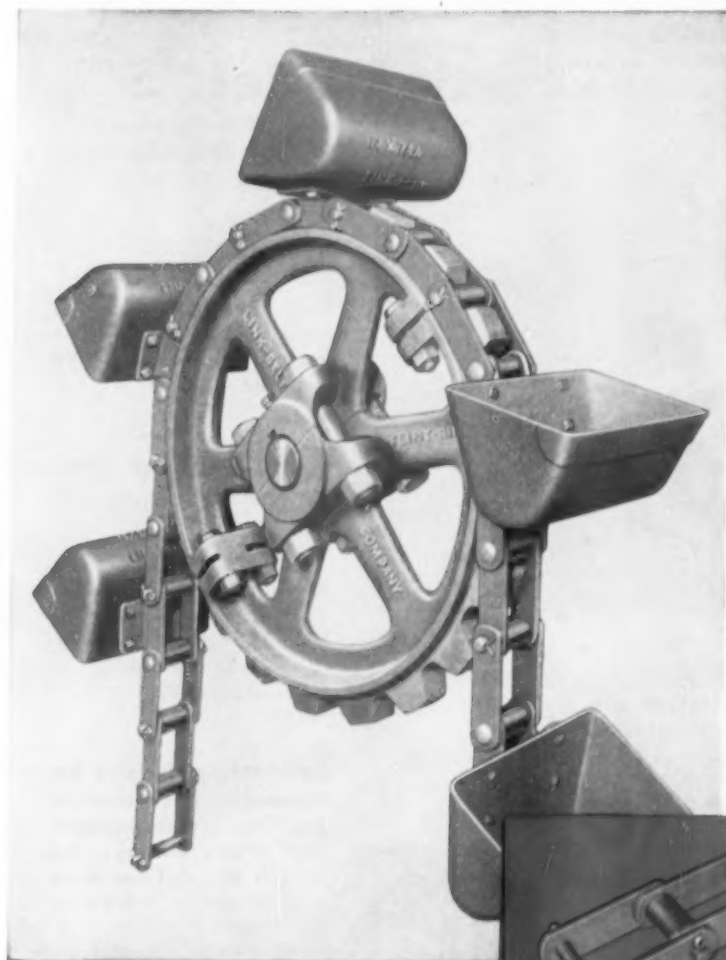
# Gates SUPER Vulco Rope

*The V-Belt with 40% more horsepower capacity*



# 4 times the life... $\frac{1}{4}$ the maintenance

*through proper selection of LINK-BELT chain*



## Bucket elevator at fertilizer plant proves advantage of choosing from this complete line

Often there's no need to go to excessively costly cast special alloy chains to get long life. Here's proof: In an Indianapolis fertilizer plant, Link-Belt SS-111 bushed chain (left) handled an average of 75,000 to 80,000 tons of fertilizer before requiring replacement. The previous type of chain had to be replaced after handling 18,000 tons.

This installation is an example of the efficiency and economy that can be gained by applying the one chain best suited to specific conditions from the complete Link-Belt line. Remember, no other single source offers you such a broad range of roller, silent, cast, combination, forged and fabricated chains . . . with matching sprockets.

A call to your nearby Link-Belt office or authorized stock-carrying distributor will bring you all the facts about the complete line of Link-Belt chains and sprockets.

Under severely corrosive conditions, Link-Belt SS chain on bucket elevator of this type in fertilizer plant handled 80,000 tons, to previous chain's 18,000.

Looking for the *best*  
chain for a specific  
need? Link-Belt makes  
the complete line.

**LINK-BELT**  
CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



VISIT OUR BOOTHS 334-342—NATIONAL SAND AND GRAVEL ASSOCIATION, COLISEUM, CHICAGO, FEBRUARY 13-16.

# Here's a **NEW** Vibrating Profitable Production of

Every design and construction feature of the new Model "S" screen has been carefully calculated to provide outstanding performance at **lowest possible cost.**

## Model "S"

screen handles feed up to 4 inches (coal up to 6 inches)



### Need Help?

Not getting enough production? Production unbalanced? Too much waste? Regardless of your problem, you can get as much technical help as you *want or need* from Allis-Chalmers... a company with over a half century of experience in designing, building and applying reduction and classifying equipment for your industry.



### NEW BULLETIN

tells how to select type and size of vibrating screen.

In addition to complete description of the Model "S" screen, Bulletin 07B8229 gives you an easy-to-understand procedure for selecting a screen. Get your copy from your nearby Allis-Chalmers representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.



Close Spacing of clamping bar bolts and proper camber provide added screen cloth life.

Vertical Angles add rigidity to side plates.

Replaceable full length buffer strips prevent metal-to-metal contact. Cushioning effect materially increases cloth life.

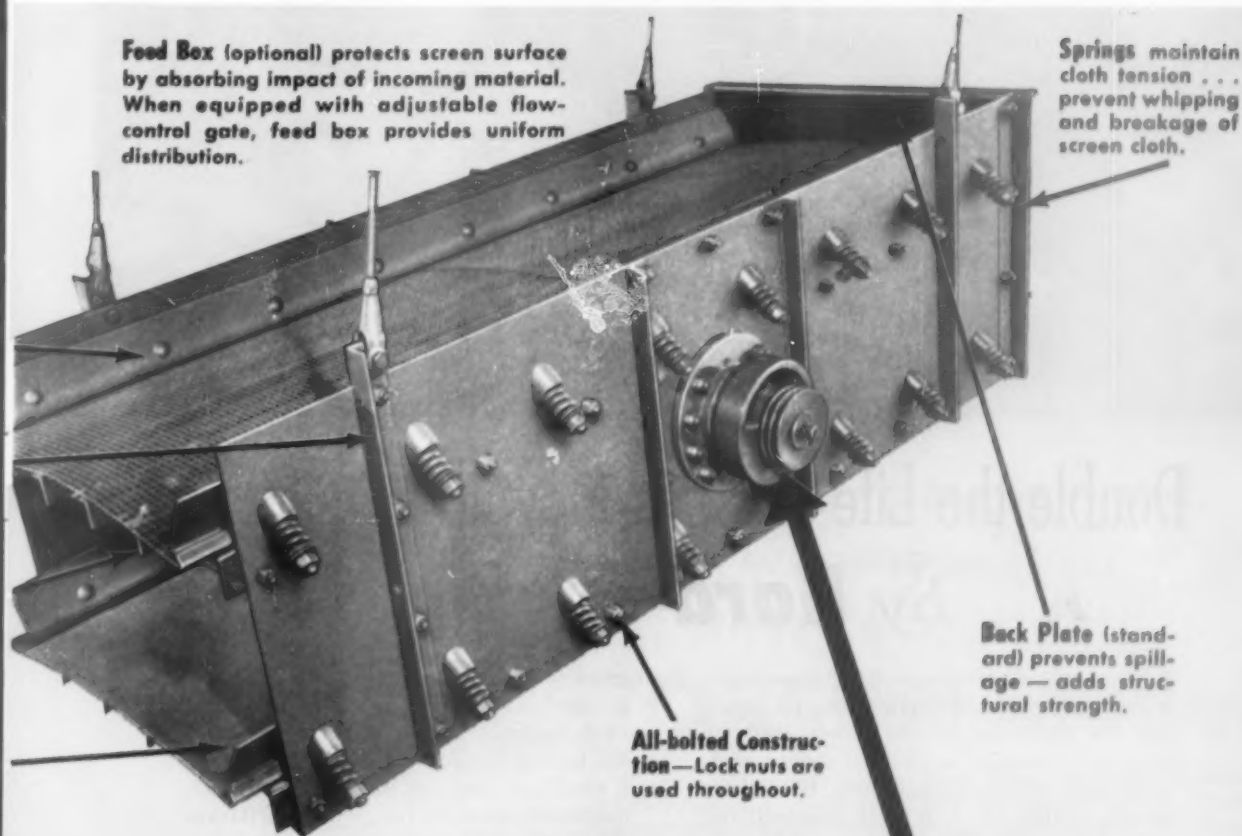
Self-locating Clamping Bar assembly holds cloth in position... accommodates cloth of any thickness. Full length support for hook strip simplifies installation of cloth.

### Sturdy Frame

1. Diagonal braces
2. Heavy channels
3. Replaceable cross members

# ALLIS-

# Screen . . . for Specification Aggregates



## Simplified Mechanism

- Eccentric shaft is enlarged and offset between bearings to provide major portion of throw. Distribution of off-center weight on both sides of bearing reduces shaft deflection and increases bearing life by equalizing bearing load.
- Small counterweighted wheels afford proper throw for screen surface selected.
- Safe, sure method of lubrication forces new grease into center of bearings, old grease out through labyrinth seals.
- True running drive extends belt life. Because the screen sheave is eccentric bored, the drive runs true . . . destructive whipping is prevented.

A 4916

# CHALMERS





## Double the Life of Earth-Moving Equipment *by* **Hard-Facing**

Trencher teeth stay sharper 2 to 3 times longer when hard-faced with HAYSTELLITE tungsten carbide rod. The hard-facing material protects the teeth from severe abrasion as they tear through rock, sand, shale, and clay at high speeds. HAYSTELLITE tungsten carbide has good shock resistance, too, and won't chip off under sudden impact.

On this job, the teeth were made of a tough vanadium steel and faced with a thin layer of HAYSTELLITE tube rod. The combination of a tough base metal and an extremely hard, wear-resistant surface helped to double the continuous service life of the trencher. Other earth-moving equipment

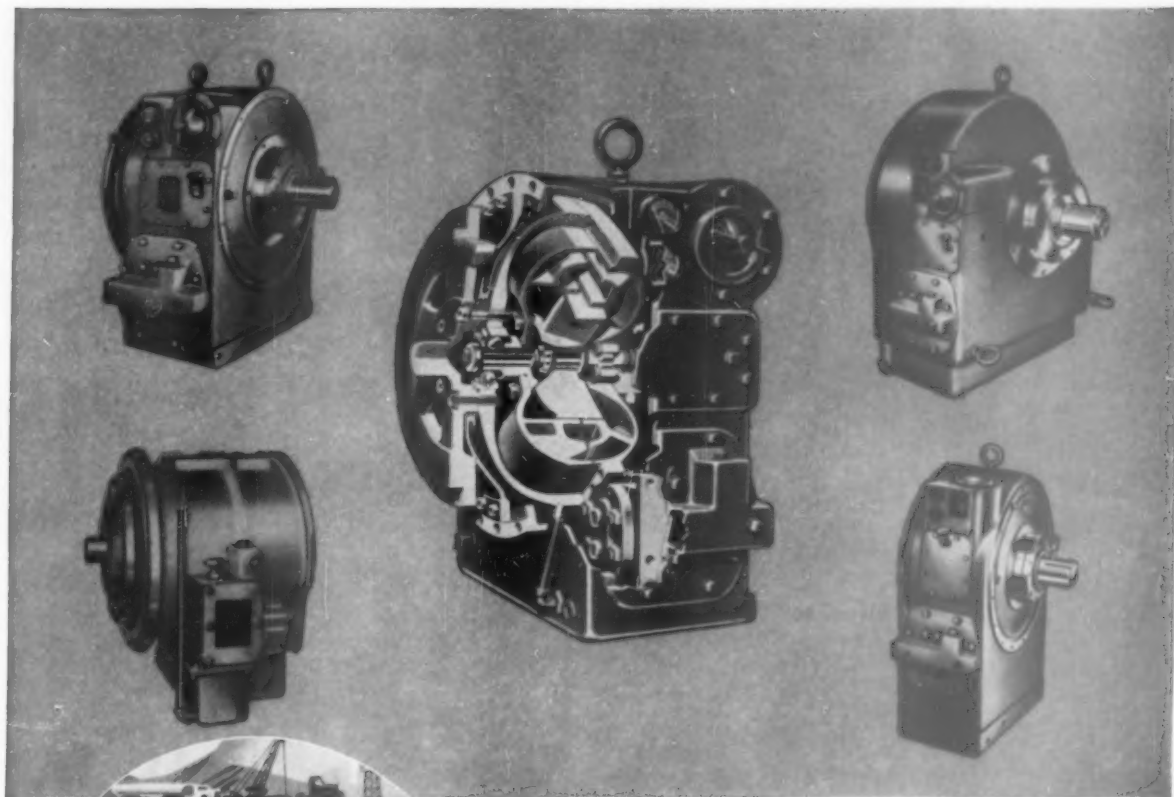
subjected to abrasion and impact can be protected in the same way. Bull-dozer blades, dipper teeth, post-hole diggers, road disks and plows, will all operate for long periods of time, at low maintenance cost, when hard-faced with HAYSTELLITE tube rod.

Your local dealer carries a complete line of HAYNES hard-facing alloys. He will be glad to recommend a HAYNES rod especially designed to resist abrasion, corrosion, impact, erosion or heat. Ask him for descriptive literature. If you don't know the location of your local dealer, write to Haynes Stellite Company, a Division of Union Carbide and Carbon Corporation, Kokomo, Indiana, for full details.

See...	Your local Haynes Stellite Dealer
or	
Write...	to Haynes Stellite Company

"Haynes" and "Haystellite" are registered trade-marks of Union Carbide and Carbon Corporation.





## For your power need, whatever it is, there's a "right" **TORCON Model**

With a horsepower range from 15 to 600, and fly-wheel diameters from 11 to 26 inches, Torcon has a model that's right for your need—a standard unit available immediately for original equipment or for field installation.

Your real benefits begin after Torcon is installed—

- more work and less wear: Torcon blade design balances engine efficiency and horsepower through the working range—smooth, shockless power that reduces wear, prolongs life
- integral unit includes oil pump, sump, pressure regulator; much better efficiency with minimum maintenance

Are you constantly on the look-out for ways to get more efficient power at less cost? Talk to Clark—on all problems of power transmission, from flywheel to point of torque application. You'll find, as do many leading equipment manufacturers, that it's "good business to do business with Clark".

**CLARK EQUIPMENT COMPANY, Transmission Division**

Falahee Road • Jackson 10, Michigan

Other Products of the Clark Automotive Division . . . TRANSMISSIONS • AXLE HOUSINGS • TRACTOR UNITS • TORCON TORQUE CONVERTERS • ELECTRIC STEEL CASTINGS • GEARS and FORGINGS • FRONT and REAR AXLES for TRUCKS, BUSES and OFF-HIGHWAY EQUIPMENT.

SEND FOR THIS TORCON BULLETIN



—a concise, helpful statement on how Torcon installations cut operating costs, prolong equipment life.

# CLARK<sup>®</sup> EQUIPMENT



**42X48 GRIZZLY-KING**

—the largest and finest overhead eccentric jaw crushers made.

**GRIZZLY-KING** superiority

You just can't appreciate the superiority of a Grizzly-King overhead eccentric jaw crusher until you've seen one in action and talked to those who have them.

Owners will tell you about tremendous production capacity, continuous service records, low jaw-die replacement costs, freedom from servicing and adjustment, low power costs.

No wonder Lippmann Grizzly-Kings continue to dominate the giant size (30x42 to 42x48) as well as regular size (12x36 to 24x36) overhead eccentric jaw crusher fields. A Grizzly-King was the world's largest 8 years ago and a Grizzly-King is still the world's largest today — in size (dimension and weight),

in output (up to 1200 tons per hour) and in maintenance savings (only lubrication in most instances).

That is why the country's largest producers of crushed stone set production and service records with these Lippmann giants . . . and why others are installing them *now*.

You can get Grizzly-King benefits only by using "Grizzly-Kings." And remember this . . . not one of these big Lippmann crushers — whether 42x48 or smaller — has ever failed or failed to satisfy. Learn about Grizzly-King's advantages by contacting your local Lippmann dealer or the factory direct, today. Lippmann Engineering Works, 4605 W. Mitchell St., Milwaukee 14, Wisconsin.

1100-56-1

#### Typical comments from Grizzly-King owners everywhere: —

"Wouldn't have any other crusher but a Lippmann"

"Crushed 1,200,000 tons without turning jaw dies . . . and they're still going strong"

"During the 5 months it has been in ser-

vice, it has required no adjusting or servicing except for lubrication"

"Maintenance? Haven't even replaced a die-bolt"

"Haven't turned my Grizzly-King dies even after 2 1/2 million tons"

These 42x48 GRIZZLY-KING crushers, the biggest overhead eccentric jaw crushers ever built, are already established as performance kings in output and low-cost operation.



Davidson, N. C.



Sandusky, Ohio



Chattanooga, Tenn.



Elizabethtown, Ky.



South Zanesville, Ohio

## breaking rocks and records ...all over the world

These older installations of GRIZZLY-KING giants have been establishing themselves right along as production leaders in some of the biggest quarries.



Winston-Salem, N. C.



Byington, Ohio



Mitchell, Ohio



New Castle, Pa.



Bloomington, Ind.



# LIPPMANN

CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS



# TAPER-LOCK

A PATENTED PRODUCT OF DODGE

**-OFF THE SHELF** **NO REBORING!**  
**NO KEYSEATING!**  
**NO MACHINING!**

Ready for the shaft, with no costly, time-consuming operations to make them fit. That's the big news about Dodge Taper-Lock Sprockets. Taper-Lock grips the shaft with the firmness of a shrunk-on fit, yet comes off easily. Bushings may be re-used. They come in sizes to meet most every application.

Taper-Lock Sprockets are available from Distributors' stocks in a complete range of B-type steel sprockets— $\frac{1}{2}$ " to 2" pitch. Dodge quality Roller Chain is packaged in 10-foot lengths—also available in 50-foot and 100-foot reels. Save time—save money—keep production rolling—get Dodge Taper-Lock Sprockets and Roller Chain from your Dodge Distributor.

DODGE MANUFACTURING CORPORATION, 2600 Union St., Mishawaka, Ind.

**CALL THE TRANSMISSIONEER**, your local Dodge Distributor, for valuable assistance on new, cost-saving methods. Look for his name under "Power Transmission Machinery" in your classified telephone directory, or write us,



THERE'S ONLY ONE TAPER-LOCK,  
THE BUSHING THAT MOUNTS FLUSH!



Standardize, economize with Taper-Lock, the bushing that is interchangeable in Dodge sprockets, sheaves, couplings and conveyor pulleys. More than 2,000,000 in use!

**DODGE**  
of Mishawaka, Ind.





## NEWEST **PAYLOADER®** MODEL sets the pace for a bomber base

Here is the starting point of Peter Kiewit Sons "production line" for concrete placing at a large bomber base — a Hough model HH "PAYLOADER" tractor-shovel feeding a belt conveyor with sand and gravel from adjoining stockpiles. The task of the "PAYLOADER" is a crucial one, because failure at this point would bring the entire concrete-placing operation to a standstill.

Peter Kiewit Sons, one of the largest and most progressive of heavy contractors, have been using "PAYLOADER" tractor-shovels for years on their contracts all over the United States. You too, can depend on the proven performance of "PAYLOADER" tractor-shovels and on the large and reliable Distributor organization that sells and services them, both at home and abroad.

This model HH is one of three completely-new 4-wheel-drive "PAYLOADER" tractor-shovels. They all have a sensational new kind of bucket arm design that provides 40 degrees of bucket tip-back at ground level, powerful pry-out action plus unusual safety, stability and visibility factors.

**THE FRANK G. HOUGH CO.**  
705 Sunnyside Ave., Libertyville, Ill.

Send data  
on new  
4-wheel drive  
units

- ☐ Model HU—1 cu. yd.  
☐ Model HH—1½ cu. yd.  
☐ Model HQ—2 cu. yd.

☐ Smaller "PAYLOADER" units

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Title \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_



**PAYLOADER®**

MANUFACTURED BY  
**THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.**  
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



# NEW OUTPUT ABILITY

with the

## ALLIS-CHALMERS HD-11G

### TRACTOR SHOVEL



2 1/4-yd capacity  
105 net engine hp

32,000 lb

11-ft, 7-in. dump height

**NEW POWER** is provided by the modern, 105-hp Allis-Chalmers diesel. Tornado Turbulence and "follow-through" combustion mean cleaner burning and more power from fuel, as well as smoother engine performance and extra long engine life. Added power pays off in extra crowding and digging ability, fast work cycles.

**NEW CAPACITY.** Big 2 1/4-yd bucket is streamlined to roll in large loads more easily. Improved design cuts spillage, clean dumping saves time and effort shaking out loads. Optional 2 1/4-yd tip-back bucket rolls back 25 degrees at ground level, handles bigger loads of loose material.

**NEW STABILITY.** Extra-long track — with almost 9 ft of track on the ground — plus 8 truck wheels on each side and 32,000 lb of weight, give the HD-11G unusual stability, plenty of traction.

**NEW-TYPE HYDRAULIC SYSTEM** is simpler, safer, easier to maintain. Tank has fewer external fittings. Magnetic filters and suction-line screens protect entire system. Hydraulic pump offers fast action, long life.

**NEW OPERATOR CONVENIENCE.** The HD-11G features easily controlled, accurate bucket action; reduced lever pull with new-type clutch; full vision; roomy platform; foam rubber seat; 60-gal fuel tank.

**NEW DEPENDABILITY AND SERVICING EASE** result from such features as heavy-duty truck wheels and idlers; new, long-life track; new-type, long-lasting, ceramic master clutch lining; unit construction's quick disassembly and assembly of major parts; 1,000-hour lubrication intervals for roller bearing truck wheels, support rollers, idlers.

CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

Stop in soon and see the  
production-boosting HD-11G  
at your Allis-Chalmers dealer's.

# ALLIS-CHALMERS





*Another Customer Speaks*



# FROM KANSAS HERE'S MORE PROOF THAT

You can not buy, at any price, a more durable pump for sand and gravel than a Thomas—you can not buy another pump that will make you as much money.



**J. E. STEELE**

*Sand and Gravel*

PHONE 2-5741 1400 N. BALDWIN  
HUTCHINSON, KANSAS  
Sept. 6th 1955.

Thomas Foundries, Inc.  
P.O. Box 1111  
Birmingham 1, Alabama

Gentlemen:

Since installing a Series FL Thomas Durable Dredge Pump, 6" discharge, early in 1954, we have operated continually without any breakdowns or delays and down time for repairs. We have also shown an exceptional increase in our production with the Thomas Pump.

Before we purchased the Thomas Pump, we were down for repairs and replacement parts every three or four months. Now, at the end of 18 months operation with your pump, we have replaced the impeller, liners and some seal parts. This is very unusual service when you consider the very sharp qualities of the sand that we have in our pit.

The engineering service and technical advice that you have given us in connection with our Thomas Pump and other problems in our operation have been very beneficial and helpful and we wish to express our appreciation and thanks.

Very truly yours,

J. E. STEELE SAND & GRAVEL

*J. E. Steele*  
J. E. Steele, Owner

- Increases production.
- Eliminates breakdowns.
- Wearing parts last 4 to 6 times longer.
- Operation backed up by factory advice and technical help.

**THOMAS FOUNDRIES, Inc.**  
P.O. BOX 1111 . . . BIRMINGHAM, ALABAMA



# ROTARY KILNS

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*Engineers and Machinery Manufacturers*

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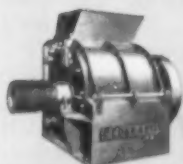


**From the size of a Piano to 3" in ONE PASS!**

**with this Big 53" x 60"**  
**DOUBLE IMPELLER**  
**IMPACT BREAKER**



**SERVES THE CEMENT INDUSTRY  
 WITH THE FINEST LINE OF  
 CRUSHING AND SCREENING EQUIPMENT**



**HAMMERMILLS**

produce a much finer quality of material, and size for size, turn out more tons per hour than other similar types of equipment.



**HORIZONTAL VIBRATING SCREENS**

20% to 30% more capacity than other types of screens results from horizontal design and other exclusive Cedarapids screen features.



**HEAVY-DUTY FEEDERS**

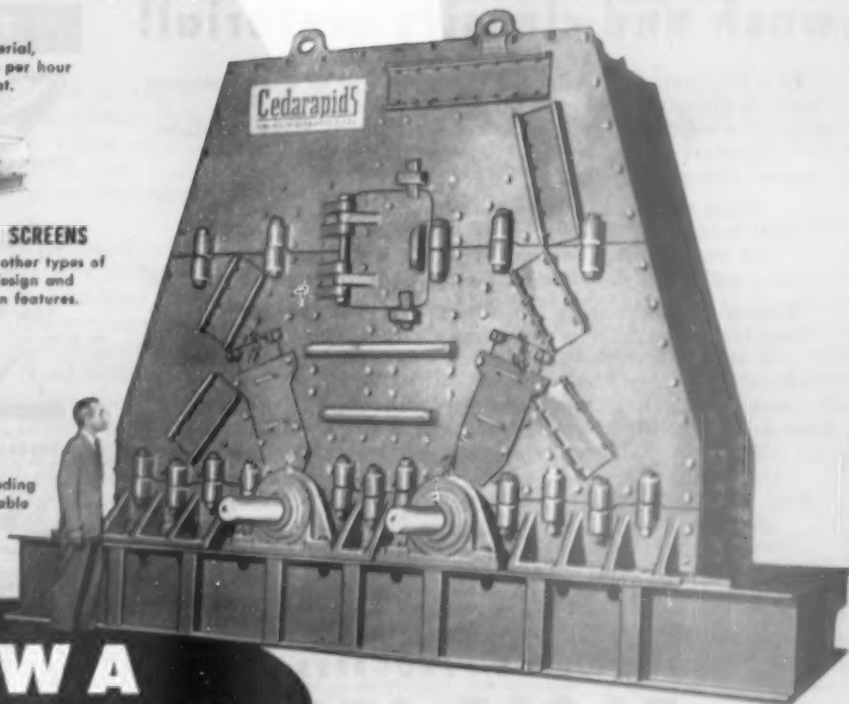
Designed for heavy-duty service in feeding big crushers to assure a smooth, workable flow of material, and withstand the shock of heavy dumping.



The Cedarapids Double Impeller Impact Breaker's reduction ratio of 40 or 50 to 1 is one of the many features which help cement producers step up output and cut production costs for crushing limestone or shale. By reducing 53" diameter material to 3 inches in one pass, you eliminate the need for much accessory equipment like secondary crushers, screens, conveyors, etc. Maintenance and operating costs are low. The entire breaking chamber is utilized for breaking rock against rock, so there is approximately 50% less contact of stone against metal. Wear on hammers and breaker bars is reduced and horsepower requirements are cut. For the complete Double Impeller story, see your nearest Cedarapids distributor or write for Bulletin CC-3.

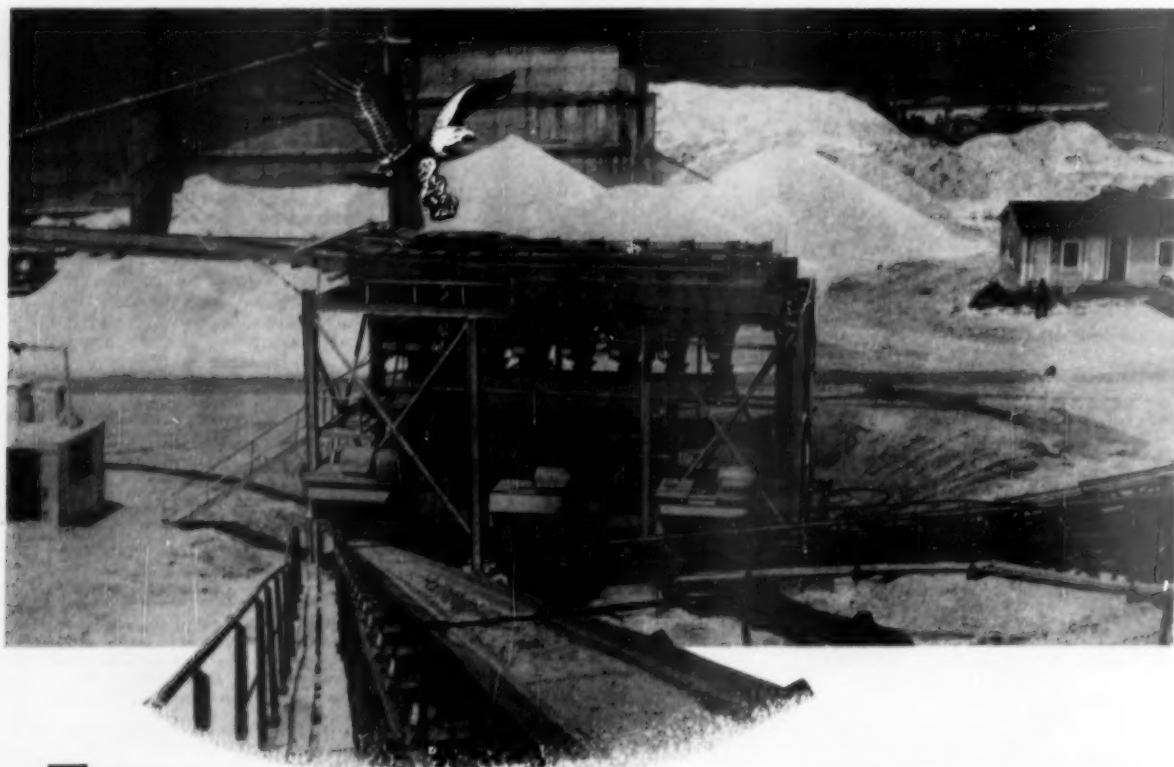
The big Model 5360S, owned by Huron Portland Cement Co. of Detroit, is reducing extremely hard shale to 3" at a rate of 300 tons per hour, with practically no maintenance! This company is also using a Cedarapids 50" x 14'6" heavy-duty cast manganese feeder.

A Kansas limestone producer is turning out 800 tons per hour with a Model 5360H, and states he could handle greater quantity if desired! This plant also includes a Cedarapids Model CMF heavy-duty feeder, 14 horizontal vibrating screens and two 4024 roll crushers.



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**MANUFACTURING CO.**

Cedar Rapids, Iowa  
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## The simple, effective, economical way to wash and classify material!

THE combination of equipment shown above is an Eagle Complete Washing-Classifying-Dehydrating Section. These Sections are designed to meet capacity and product requirements of any producer.

They are a "package unit"; can be set down and integrated with any plant.

There is NO equipment or combination of equipment that comes even close, as far as ease of operation, economy and overall results are concerned. Eagle pioneered material washing and classifying and has the broadest experience in the field.

Material, in this case, is flumed to the Eagle Water Scalping-Classifying Tank. The power-operated valves assure removal of excess water, and classification within the tank by utilizing natural settling rate of particle sizes. Gated splitters below each valve, enable throwing desired percentage of each valve's bleed to multiple-cell Collecting-Blending Flume below splitters.

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BREAKER BALLS & PILE HAMMERS.

## EDITOR'S PAGE

### Industries' Growth Requires More Emphasis on Public Relations

**O**UR REQUEST for participation by the rock products and concrete products industries in developing information for this issue had the greatest response we have ever received. We personally read all the letters received and are grateful for the splendid cooperation. Thanks to all of you who took the time to reply!

Our review of business conditions in 1955 and our appraisal of the outlook ahead, as summarized in this issue, reflect the enormous growth of the nation and the high level of prosperity. New records for volume of business were established in 1955 for all the major industries which we serve, and volume will reach new highs in 1956 barring unforeseen developments.

Construction activity in 1955 again exceeded the estimates of most of the experts. An all-time high of forty-two billion dollars was established, and a forty-four billion dollar volume is predicted for 1956.

These figures are not inflationary. When scaled down to volume of construction and compared with construction put in place during the prosperous 1920's, and when the growth of the nation is considered, the extent of actual physical construction is not out of line.

#### Public Relations

Prosperous conditions for these industries have been accompanied by a growing menace stemming from all manner of complaints about industry operations, restrictive zoning laws and legislation which would limit reserves of raw materials for future expansion.

This threat to operations of these industries has become serious in many areas this past year and is to be expected to pose more problems sooner or later as cities and communities continue to grow. Any natural resource operation in populous areas sooner or later is apt to be faced with challenges and the alert producer recognizes the threat.

There is no question that these industries must recognize that it is necessary to concentrate on fostering better public relations. Local communities, the general public and employees alike must be made to have a better understanding and appreciation of these industries, for their contributions in providing employment, their expenditures, and for what they are doing community-wise in order to belong.

The second phase of our special effort in this issue is concerned with public relations in the hope that the seriousness of the problem may be pointed up and that some suggestions as to course of action be presented. We think the industry has a wonderful story to tell and one that could be mighty effective in removing the "undesirable" stigma that

exists in many areas where there are plants today.

Every branch of these industries has an investment per employe for the average plant that far exceeds the average investment for all types of businesses. Individual plants have laid some real money on the line to provide jobs for employes and from which benefits flow to their communities. They make substantial expenditures for machinery, supplies and payrolls that deserve recognition.

If these industries will take steps at the local level to get the story of their importance across to local communities, the public and their employes, much good, will have been accomplished. When this is backed up with the elimination of potential causes of complaint, whether they be concerned with noise, dust, plant appearance or other, and corrective measures are immediately taken where there are legitimate causes for complaint, future threats may be averted.

That has been the experience of progressive, public-relations-minded producers who are located in populous areas. They have successfully averted difficulties over many years and others can do the same. It is also the answer to getting proper zoning ordinances and opening the way to securing reserves of raw materials for future expansion.

What influenced a Superior Court Judge recently, to turn down a plea for an injunction by lemon growers in Southern California that would have closed a cement plant? That judge knew the importance of the plant to the community and he would not consider action that would reduce the available supply of cement.

The portland cement industry has accomplished much in the field of employe relations and in public relations generally. It continues to work toward putting its house in good order and in gaining recognition and acceptance in plant communities.

A good example of its recognition of the value of public relations is in this very issue of **ROCK PRODUCTS**. Companies representing more than three-quarters of the industry's capacity cooperated by generous replies to our request for information.

They are doing much in plant expansion to alleviate the cement shortage and in improving working conditions. Just as important, they desire to get their story across. It was our idea to summarize their progress and we found the industry willing to capitalize. All our readers concerned with cement, concrete and aggregates might find our summary on cement of interest.

*Bron Nordberg*

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**TWO**  
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**ONE**  
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job



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and tractor in ONE machine**

Mount a Hystaway on a new or used Caterpillar-diesel Tractor and you get a hard-working piece of equipment that allows one operator and one machine to do a job that formerly required two separate machines (crane and tractor.)

With Hystaway one man and one Machine handle all secondary breaking and clean-up. Hystaway, equipped with crane boom and drop ball, mounts easily without alteration on a new or used Caterpillar D6, D7, or D8 Tractor.

Handy for maintenance work — able to travel at tractor speeds, Hystaway also keeps busy on jobs such as lifting screens and motors on crusher repairs, building and maintaining haul roads.

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in operating costs made possible by the Hystaway-Tractor combination.

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## ROCKY'S NOTES

NATHAN C. ROCKWOOD

TWO PREVIOUS INSTALLMENTS of this series have discussed the constitution of portland cement clinker, as developed in papers by research experts, Third International Symposium on the Chemistry of Cement, London, England, late in 1952, published late in 1954\*. Several following papers, comprising about 150 pp. of the book, discuss the hydration products of portland cement clinker. Of these the two hydrates of calcium silicate (the low limed and the high limed) are the best known, and presumably the most helpful in forming a cementing medium. These have been formed, as extremely fine crystals, either from pure anhydrous dicalcium and tricalcium silicates, or from solutions, or colloidal suspensions of lime and silica. They are assumed to exist separately in hydrated portland cement, yet no one, to date, apparently, has separated or identified them in hydrated portland cement.

Dr. J. D. Bernal, Birkbeck College Research Laboratory, University of London, who is much quoted on the subject, had the opening paper: "The Structures of Cement Hydration Products." His summary states: "The forms of hydrated calcium silicate stable at low temperatures have been shown to be two related types of structures of composition



[These follow the usual terminology used in discussing portland cement, C=CaO, and S=SiO<sub>2</sub>, and H=H<sub>2</sub>O.] They occur in the form of extremely thin fibrous crystals, similar to those found in gels, and this fact may be related to the setting properties of cement. Evidence of the presence of these compounds has been found in pastes of hydrated tricalcium silicate and in a sand-lime brick. The first compound has been identified with a group of somewhat ill-defined minerals from Crestmore, Calif., from Tobermory in Mull [Great Britain], and most recently from Ballycraighy in northern Ireland, which will be referred to, pending final agreement as to nomenclature, as tobermorite. [We thus have the derivation of a term used in previous articles.]

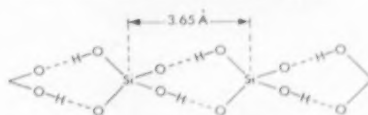
"The structures of these compounds show the presence of a fibre repeat unit of about 7.3 Å with marked pseudo-halving. This is common to a num-

ber of other hydrated silicates and is thought to imply the existence of silicate tetrahedra joined by hydrogen bonds. They also show a layer structure, the spacing of which varies on loss of water between 14 and 9 Å in a way similar to the clay minerals and which may be connected with the shrinking properties of concretes." Let us remind our readers again that Å = Angstrom unit, a unit of linear measure which is

$$\frac{1}{10,000} \text{ th of a micron.} \\ (\mu), \text{ or } \frac{1}{10,000,000} \text{ th of a millimeter.}$$

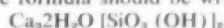
### The Silicate Ion

The structure described by Dr. Bernal he illustrates with this figure:



The O = Oxygen ions, Si = Silicon ions, H = Hydrogen ions (positively charged nuclei). These, presumably are the fibres which form the cementing or bonding medium in hydrated cement.

Dr. Bernal questions: "Are these hydroxyl ions [in hydrated calcium silicates] attached to the silicon ions, the calcium ions, or to both? The evidence from afwillite [a natural hydrated dicalcium silicate] shows definitely that here at least every silicon atom is linked to one hydroxyl and to three oxygen ions giving rise to the monoacidic silicate ion  $[SiO_3(OH)]^-$ . There are, however, in addition two water molecules closely bound to calcium atoms, so that the formula should be written:



The partial analysis of dicalcium silicate α-hydrate indicates the probability that the ion  $[SiO_3(OH)]^-$  is also present here as well as free (OH) ions so that the formula could be written:



It must be admitted, however, that this cannot be proved till an analysis accurate enough to determine the length of the hydrogen bond to 0.02 Å has been completed. In the case of hillbrandite (dicalcium silicate β-hydrate) the evidence is still weaker, but for what it is worth, indicates the presence of the diacidic ion



the formula being then



This formula, it may be recalled, contains the "silicate ion" referred to in our review of Dr. R. H. Bogue's paper on the "Calcium Silicate Hydrates," published in the August, 1954 issue, p. 150. His formula showed only one calcium ion directly attached to the silicate ion, but this merely emphasizes the unknown role of calcium in the whole picture. Dr. Bernal states: "It is possible that the SiO<sub>4</sub> groups may be linked together by the Ca ions and it will be necessary to wait until the structure is worked out before the hypothesis of the existence of the  $[SiO_4(OH)_2]^{2-}$  ion can be accepted as more than plausible."

### Role of Calcium Ion

H. D. Megaw, University of Cambridge (England), discussing this paper said: "Though the existence of  $(SiO_3OH)^-$  or  $[SiO_3(OH)]^-$  ions is very probable, the evidence from afwillite does not suggest that their linkage together by hydrogen bonds would account for the fibre structure; it would point rather to Professor Bernal's alternative suggestion that the linkage is by Ca ions. In afwillite, the direction of short spacing and strong bonds (corresponding to the elongation of the crystal) is marked by a continuous line of shared edges between Si tetrahedra and Ca polyhedra; on the other hand the direction in which hydrogen bonds predominate is cut across by the cleavage plane. Thus the hydrogen bonds are not the strongest links in this kind of a structure."

In closing his discussion Dr. Bernal said: "If we have succeeded in showing that calcium silicate hydrate (1) is formed in set pastes and concretes, it still remains to show whether it is the agent which actually holds the particles of aggregate together, and what the mechanism is by which it does hold them together. Those are the problems which still face us."

The present state of knowledge on the hydration products of portland cement is well summarized in a paragraph from the paper by Dr. Harold H. Steinour, Portland Cement Association, U.S.A., entitled: "The Reactions and Thermo-chemistry of Cement Hydration at Ordinary Temperatures;" quoted as follows: "A large

(Continued on page 160)

\*Published by the Cement and Concrete Association, 62 Grosvenor Gardens, London SW1; price 89.

# "TOUGH AS A MULE"

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THAT's the verdict of Ed Walker, job super for H. G. Cozad Construction Co., on a job near Roff, Okla. This agile CAT® DW15, shown with No. 15 Scraper, had just been driven 90 miles in three hours from a shut-down job to this one!

The Caterpillar DW15 is stripping clay overburden so that sand can be quarried for the Roff plant of Mid Continent Glass Co. The big yellow machine works 10 hours a day, six days a week, with time out only for bad weather. According to Ed Walker, "There just isn't any other equipment like Caterpillar machines. They move a lot of dirt without giving us any trouble."

H. G. Cozad is 90% standardized on Caterpillar. In addition to this DW15, the firm owns two Cat DW21s and three DW10s with scrapers, seven Caterpillar track-type Tractors, and a No. 12 Motor Grader. About two-thirds of the equipment is on this job, moving 6000-7000 cu. yd. of overburden per day over a quarter-mile haul.

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DW15 can highball at speeds up to 24 m.p.h. for fast cycle times. Its four-cycle Caterpillar Diesel Engine develops 186 HP, and puts out maximum torque when slugging through tough going with heavy loads. Its companion No. 15 Scraper has a capacity of 15 yd. (heaped), and features fast loading with a live, "boiling" action, and positive ejection of sticky materials.

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# LABOR RELATIONS TRENDS

By NATHAN C. ROCKWOOD

## A Regular Bonus that is Not Part of Regular Pay

**B**Y A RECENT FEDERAL COURT DECISION the air is cleared somewhat on the status of yearly bonus payments as to whether or not they must be included in computing the rate of payment for overtime work. The U.S. District Court, District of Colorado, rendered a decision in the case of Mitchell, etc., v. American Electric Co., on July 22, 1955, which if upheld in other federal courts, establishes that neither regularity of employer's payment of bonus to employees, nor size of bonus, in and of itself, determines the issue whether the bonus must be included in statutory overtime wage computation.

Extracts from Judge Christenson's decision follow:

"This is an action brought by the U. S. Secretary of Labor under §17 of the Fair Labor Standards Act, 52 Stat. 1060, as amended, 63 Stat. 910, 29 U.S.C.A. §201 et seq., to enjoin the defendant from alleged failure to pay overtime compensation in compliance with §7 of the Act, 29 U.S.C.A. §207.

"Despite a reservation of the issue in the pretrial order, it is now substantially conceded by defendant, and the Court finds, that the defendant's Colorado branches were engaged in commerce within the meaning of the Act, and that the defendant, therefore, is within its coverage for the purposes of this suit.

"The decisive question remaining is whether the bonuses which have been paid by defendant to employees in Colorado must be included in the computation of overtime. The Government insists that such bonuses must be so included because they are a part of the regular rate of pay. The defendant contends that they are discretionary bonuses, excluded as a basis of overtime compensation by the following express terms contained in the Act of October 26th, 1949, popularly known as the 'Fair Labor Standards Amendments of 1949' amending §7 of the Fair Labor Standards Act, 29 U.S.C.A. §207:

"(d) as used in this section the regular rate at which an employee is employed shall be deemed to include all remuneration for employment paid to, or on behalf of, the employee, but shall not be deemed to include—

\*\*\*\*\*  
"(3) sums paid in recognition of services performed during a given period if either, (a) both the fact that payment is to be made and the amount of the payment are determined at the sole discretion of the employer at or near the end of the period and not pursuant to any

prior contract, agreement, or promise causing the employee to expect such payments regularly \* \* \*."

"Various pertinent principles have been set out and discussed by the United States Supreme Court. Various relevant cases are here cited. These cases are helpful, but do not appear controlling because of different fact situations, nor does the language in them lay down any rule clearly governing the situation here.

"Other 'bonus cases,' somewhat in point, are readily distinguishable where the regular year-end bonuses were obviously paid as compensation for services previously rendered, and where the real question was not whether bonuses should be included in the computation of overtime pay, but whether they could be offset against overtime payments insufficient on other grounds.

"The law with respect to various comparable bonus plans, however, has been debated in the Second and Eighth Circuits, the decisions of which are most nearly in point."

[Here follow various court decision references.] "While differences can be found between them — and, indeed, are seized upon by each in defense of its failure to follow the results indicated in the other — the decisions in the Adams and Shepherd Niles cases cannot be reconciled. Basically, the latter commits the Second Circuit to the doctrine that regularity of bonus payments in the past necessitates their inclusion in overtime computations, while the Eighth Circuit does not regard regularity as determinative, if the ultimate facts are otherwise determined to be that the making of the bonus payments, and the amounts thereof, are at the sole discretion of the employer and not pursuant to any prior contract, agreement or promise causing the employee to expect such payments regularly.

### Regularity of Payment

"I am sensible that the circumstances of payment including regularity, must be taken into consideration, and that regularity of payments under certain circumstances may be entitled to weighty consideration. Yet, I think emphasis rather must be on the ultimate issue. To make regularity or size of bonus determinative, in and of itself, would be to include conditions to the exemption which are not justified

by the language used. Congress did not provide that bonuses, to be excluded from overtime computations, had to be in small amounts or irregularly paid.

"Administrative interpretations of the Act, although not issued as regulations under statutory authority, carry persuasion as an expression of view of those experienced in the administration of the Act and acting with the advice of a staff specializing in its interpretation and application.

### Interpretive Bulletins

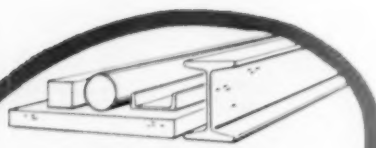
"The 1949 interpretive bulletin issued by the Department of Labor referred to a bonus as being excluded as a basis of overtime compensation, among other things, if it was paid by the employer, 'without having previously promised, agreed or arranged to pay such bonus.' This concept of 'arrangement,' as adding to the idea of agreement or promise, is abandoned in the 1953 interpretive bulletin (No. 778.6D), issued in the light of the 1949 amendment to the Act. To the word 'arrangement' the Shepard Niles decision, supra, has accorded considerable weight.

"Furthermore, Interpretive Bulletin No. 778.6D points out that 'An employer who promises to sales employees that they will receive a monthly bonus computed on the basis of allocated percentage of each item sold whenever, in his discretion, the financial condition of the firm warrants such payment, has abandoned discretion with respect to the amount of the bonus thereof, not with regard to the fact of the payment. Such a bonus would not be excluded from the regular rate. On the other hand, if a bonus such as the one just discussed were paid without prior contract, promise or announcement and a decision as to the fact and amount of payment lay in the employer's sole discretion, the bonus would be properly excludable. \* \* \* from the computation of overtime.

"With regard to gifts under §7(d) (1) of the Fair Labor Standards Act, as amended, it is expressly provided in the interpretive bulletin mentioned that if the payment is so substantial that it can be assumed that employees consider it a part of the wages for which they worked, the bonus cannot

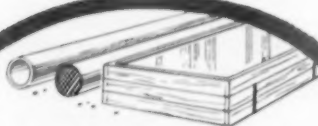
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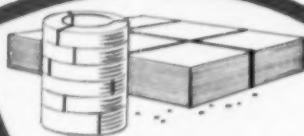
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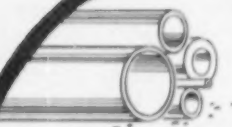
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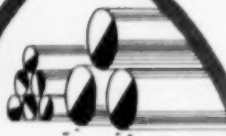
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Over 20 kinds and many gauges—in pattern sizes or cut to your order.



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Mechanical and pump cylinder tubing, seamless and welded; hydraulic fluid line and boiler tubes; structural tubing, etc.



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Tested alloys of known hardenability, standard and aircraft quality, as rolled, annealed, heat treated.

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Need steel in a hurry? Ryerson stocks are the nation's largest, so one call to your nearby Ryerson plant brings quick delivery of almost any kind of steel in almost any quantity—all of it certified for high uniform quality.

Do you want your steel prepared for immediate use? Ryerson facilities include the most modern close-tolerance equipment for sawing, shearing and flame cutting to your specifications.

Of course, current heavy demand makes it

difficult to keep all sizes always on hand but our stocks are being replenished continuously. Steel that's out of stock today may be in stock tomorrow. And experienced Ryerson steel men will help you make the most of steel on hand. So for everything in steel and steel service . . . call Ryerson.

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# PEOPLE IN THE NEWS

## Division Sales Manager

CHARLES D. HARLESS has been named eastern division manager of the National Gypsum Co., Buffalo, N. Y., to succeed Melvin F. Cerruti who was



Charles D. Harless

recently promoted to general sales manager. The eastern division covers the New York metropolitan area, New England, and the Albany, N. Y. and Philadelphia areas. He joined the company as a general line salesman in Albuquerque, N. M., in 1945. Four years later he was promoted to large job specialist for the Houston, Texas, sales district. He was transferred to the Buffalo office in 1950 and promoted to rock wool insulation commodity sales manager. One year later he became New York City assistant manager and in 1953 was appointed New York City district manager.

## Executive Secretary

KENNETH R. LEWIS has been appointed executive secretary of the Master Builders of Iowa, state chapter of the Associated General Contractors of America. Executive secretary of the Kansas chapter since 1949, Mr. Lewis succeeds Walter W. Moeller, president of the W. G. Block Co., Davenport, Iowa, who has been executive secretary for the past ten years. Born in Topeka, Kan., Mr. Lewis is a graduate of the University of Kansas, Lawrence, Kan. Prior to becoming executive secretary of the Kansas chapter,

he was assistant manager of the Topeka Chamber of Commerce.

Mr. Moeller has been associated with W. G. Block Co. since 1945, after 20 years of service with Dewey Portland Cement Co. He became president of the block company at the time C. A. Mainwaring was elected chairman of the board.

## Kaiser Gypsum Manager

DONALD G. WOODFORD has been appointed assistant to the general sales manager of Kaiser Gypsum Co., Oakland, Calif. He joined the sales department of the Los Angeles office in 1950 and has served as a line salesman in the Southern California territory since 1952. He received his B.S. degree in business administration and marketing from the University of Southern California.

## Basic Personnel Changes

A. M. CAITO, formerly works manager, has been appointed manager of the Ohio operations of Basic Refractories, Inc., Cleveland, Ohio, in a move to bring the company's Ohio plants under a single management. E. P. Pearson has been named assistant technical director. He was formerly director of research in charge of the Bettsville laboratories and will be succeeded by Vaughn V. Hughey, senior research chemist.

## I.M.C.C. Geologist

KEFTON H. TEAGUE has joined the industrial minerals division of International Minerals and Chemical Corp., Chicago, Ill., as geologist under the supervision of Frank R. Hunter, division geologist. A graduate in geological engineering from North Carolina State College, Mr. Teague was formerly with the U. S. Geological Survey and the Tennessee Valley Authority. He will make his headquarters in Knoxville, Tenn.

## On Superior Sales Staff

BENNETT M. SAUNDERS has joined the sales staff of Superior Portland Cement, Inc., Seattle, Wash. He was formerly field engineer for the Portland Cement Association and more recently was associated with Boeing Airplane Co. in Seattle. He is a former president of the American Society of Military Engineers and is presently serving as chairman of the Puget

Sound Engineering Council. Mr. Saunders attended the University of Washington, Seattle, and served with the U. S. Army in the South Pacific during World War II.

## Assistant to Vice-President

ARNOLD C. SANDERS has been appointed assistant to H. F. Sadler, vice-president in charge of sales of United States Gypsum Co., Chicago, Ill. He replaces G. B. Hollowell, who has been named district sales manager in Philadelphia to succeed Wallace R. Weidman who has been named to the newly created post of assistant to the vice-president in charge of dealer sales.

## Director of Research

RUDOLPH C. VALORE, JR., formerly cement and concrete specialist with the National Bureau of Standards, Washington, D.C., has been appointed director of research and development in the engineering department of the concrete division of Texas Industries, Inc., Dallas, Texas. Mr. Valore resigned from the National Bureau of Standards after 17 years of service, during which he became internationally known for his studies of cellular concrete, research on frost action on concrete and dynamic tests of materials. He has written numerous technical papers on cement and concrete which are now in general use as reference data. His most recent paper on "Insulating Concretes" will be published shortly. In 1954, Mr. Valore



Rudolph C. Valore, Jr.

was awarded the Wason Medal by the American Concrete Institute for the most meritorious technical paper published during the year.

Born in Leal, N. D., Mr. Valore received his B.A. degree in physics and English from North Dakota State Teachers College. He received his M. A. degree in English from New York University and did post graduate work in physics and mathematics at George Washington University, Washington, D. C.

### J. R. Sensibar on TV

MIDWESTERNERS received a firsthand story of Chicago's lakefront development when J. R. Sensibar, president of Construction Aggregates



J. R. Sensibar

Corp., Chicago, Ill., was invited on the WBBM-TV show, "This is the Midwest," to tell the story of the Sensibar-method of hydraulic filling and dredging which was used to fill in the Chicago shoreline back in 1916, when his company was only a few years old. The Sensibar-method is now being used around the world including the frigid regions of Atikokan, Ontario, Canada, and off the coast of Venezuela in South America.

### Heads Builders Exchange

ROBERT F. PORTER, vice-president, Harry T. Campbell Sons' Corp., Towson, Md., has been elected president of the Building Congress and Exchange of Baltimore, Md. Born at Baldwin, Md., Mr. Porter was educated at Towson High School and Johns Hopkins University. He served as president of the National Ready Mixed Concrete Association in 1949 and worked unceasingly with other officers, directors and members of the association to advance the theory of producing and controlling good concrete. He worked closely with engineers, architects, contractors and builders through-

out the United States, Australia, South America and England. Mr. Porter is a director of the Cockeysville National Bank, president of the Towson Library, and a member of the Construction and Civic Development Committee of the United States Chamber of Commerce.

### Executive Vice-President

PETER J. DOANIDES has been appointed executive vice-president of Vacuum Concrete, Inc., Philadelphia, Penn. He was formerly chief engineer of Roberts Construction Co. and president of the Concrete Development Corp., Ltd., both of Johannesburg, South Africa. Mr. Doanides, who recently received his engineering doctorate from the University of Athens, designed and constructed some of the world's largest precast prestressed concrete water storage tanks in Johannesburg.

### Lone Star Vice-President

WALTER F. LAW has been appointed vice-president of Lone Star Cement Corp., New York, N. Y., and will serve as executive assistant to the president, H. A. Sawyer. Mr. Law joined Lone Star in 1925 as a sales representative and in 1945 was appointed sales manager of the Pennsylvania division. He has been vice-president and manager of the Alabama division since 1949.

B. L. Wyman, Jr., formerly sales manager of the Alabama division, succeeds Mr. Law as vice-president and manager of the division. He joined the company in 1925 as sales representative and was appointed assistant sales manager in 1945.

C. S. Matthews succeeds Mr. Wyman as Alabama division sales man-



Walter F. Law

ager. He became associated with Lone Star in 1934 and has served as sales representative and assistant division sales manager until his recent appointment.

### Advertising Manager

PAUL D. BERTHELOT has been named advertising manager for the concrete division of Texas Industries,



Paul D. Berthelot

Inc., Dallas, Texas, with headquarters in Fort Worth. He will be in charge of advertising and promotion for Fort Worth Sand and Gravel Co. and 29 divisions in Texas, Louisiana, Oklahoma and Kansas manufacturing Haydite lightweight aggregate, Texcrete masonry units, Holiday Hill stone, Cañon brick and other concrete products. Mr. Berthelot is a graduate of Texas Technological College, Lubbock, with a B.A. degree in journalism. He has been an advertising agency account executive in Fort Worth since 1948.

### C.I.A. Officers

B. J. STEGER, auditor, The France Stone Co., Toledo, Ohio, has been elected first vice-president of the Toledo Control of the Controllers Institute of America. Merrill J. Ferree, controller, Granite Rock Co., Watsonville, Calif., was named a director of the San Francisco Control, and Kenneth A. Stotler, secretary-treasurer, Pioneer Sand and Gravel Co., Seattle, Wash., was appointed a director of the Seattle Control.

### Truck Superintendent

RALPH R. RULE has been appointed superintendent of truck transportation for the Southwestern Portland Cement Co., Los Angeles, Calif. He was formerly trucking manager for the Los Angeles division of Safeway Stores.

### Valley Limestone Officers

HERMAN E. SNATER, president of the Missouri Valley Limestone Co., Des Moines, Iowa, has been elected chairman of the board, in a reorganization following the purchase by Mr. Snater and the corporation of the interests of C. M. Kirtley, former chairman of the board and president, and Arling E. Smith. Other officers are Frank McArthur, executive vice-president; Tom L. Robinson, vice-president; and Albert J. Keiser, secretary-treasurer.

### Quarry Superintendent

TURNER W. RICHARDS has been appointed quarry superintendent at the Fort Dodge, Iowa, plant of United States Gypsum Co., Chicago, Ill. He joined the company in 1953 as assistant quarry engineer at Fort Dodge, and has since served as perlite foreman and general quarry foreman. He is a graduate of the Missouri School of Mines, Rolla, Mo., where he received his B.S. degree in mining engineering.

### Sales Representative

WESLEY W. UTLEY has been appointed sales representative in the Richmond territory of Southern Materials Co., Inc., Norfolk, Va., which has recently opened a new plant in Lynchburg, Va. Mr. Utley attended Virginia Polytechnic Institute, Blacksburg, Va., majoring in mechanical engineering.

### Chester Reitze Retires

CHESTER N. REITZE has retired as president of Superior Portland Cement, Inc., Seattle, Wash., after 35 years of service, but he will continue to serve in a consulting capacity. A director of the company, Mr. Reitze has been president since 1948, and prior to that was vice-president and general manager for 24 years.

### Heads Technical Department

RAYMOND E. TUTTLE has been appointed manager of the technical department of the Bonnie phosphate chemicals plant, Bartow, Fla., of International Minerals and Chemical Corp., Chicago, Ill. He has been chief process engineer at Bonnie for the past year and is a chemical engineering graduate of Cornell University, Ithaca, N. Y.

### Vice-President and Manager

WILLIAM P. JACKSON, formerly operations manager, has been appointed vice-president and general manager of the Glacier Sand and Gravel Co., Seattle, Wash. Mr. Jackson has been a member of the Kaiser organization

since 1931, when he joined the Henry J. Kaiser Co. at Oakland, Calif. He was appointed administrative assistant of Permanente Cement Co. in 1946 and a short time later was transferred to Glacier Sand and Gravel Co. as retail manager, subsequently becoming operations manager.

### Assistant Manager

WILLIAM D. STONE has been appointed assistant manager of the geology and quarry operations department of the perlite and dicalite divisions of the Great Lakes Carbon Corp., Florence, Colo., and Socorro, N. M. He was formerly superintendent of the perlite plants.

### On Research Board

DR. WILLIAM EITEL, director of the Institute of Silicate Research at the University of Toledo, has been appointed to the highway cement and concrete research board of the division of engineering and industrial research, National Research Council.

### Named Vice-President

SOL CUTLER has been appointed vice-president of the Buffalo Burial Vault Works, Inc., Buffalo, N. Y., in addition to his duties as sales manager. He has been with the company since it was formed in 1934.

### District Manager

KARL J. JALBERT has been named manager of the western Michigan district of the United States Gypsum Co., Chicago, Ill., with headquarters in Grand Rapids, Mich. He succeeds Robert B. Fisher, who has been appointed manager of the Washington district.

### Assistant Sales Manager

RALPH E. TOWERS, sales engineer, has been appointed assistant sales manager of the Bessemer Limestone and Cement Co., Youngstown, Ohio.

and Cement Co., Youngstown, Ohio, died suddenly on November 13 at the age of 66. Born in Greenville, Ohio, Mr. Marshall was graduated from Ohio State University, Columbus, Ohio, with a degree in mechanical engineering. He was also president of the Marshall Mining Co., which he founded in 1937.

WILLIAM R. HICKS, retired construction superintendent for Alpha Portland Cement Co., Easton, Penn., died October 29 following a short illness. He was 74 years old and had been associated with the company for 38 years, retiring in 1949. Born on Long Island, N. Y., Mr. Hicks joined Alpha Portland Cement Co. in Cementon, N. Y., in 1911 where he became assistant construction foreman. Later he was appointed superintendent of construction at the Catskill plant where he remained for 12 years. In 1922 he was transferred to the Martins Creek, Penn., plant as construction superintendent.

R. FRANK MISER, vice-president of the Old Fort Supply Co., Fort Wayne, Ind., and manager of the ready-mixed concrete division, died October 30 at the age of 44. He had been ill since last February. Born in Waterloo, Iowa, Mr. Miser was affiliated with the Joslyn Supply Co., Fort Wayne, for three years before joining Old Fort Supply Co. in 1939.

RUSSELL M. EIDEMILLER, retired owner and operator of the New Carlisle Sand and Gravel Co., New Carlisle, Ohio, and his wife, were killed on October 16 in a two-car accident while enroute home after visiting at the home of Mrs. Eidemiller's sister of Troy, Ohio. Mr. Eidemiller, who was 61 years of age, had retired a week before the accident.

EUGENE F. CURTIN, who, with his father, the late Cornelius J. Curtin, operated the Farnum-Cheshire Lime Co., before it merged with U. S. Gypsum Co. in 1930, died November 18 at his home in Sea Girth, N. J., after a long illness. He was 56 years old.

SIDNEY ALBERT PERKINS, one of the founders of the old Standard Gypsum Co., and publisher of the Daily Olympia, Wash., and the Bellingham, Wash., Daily Herald, died October 31 at his home in Tacoma, Wash., after a six months' illness. He was 90 years old.

JAMES A. ECK, president of J. A. Eck & Sons, Inc., sand and gravel firm of Montoursville, Penn., died October 26 following a short illness. He was 92 years old and had been president of the company since it was founded in 1921.

## OBITUARIES

THOMAS HARBAUGH LINEAWEAVER, president of Gray's Ferry Brick Co., Iona, N. J., died October 19 after a long illness. He was 59 years of age. A native of Lebanon, Penn., Mr. Lineaweaver was graduated from the Mercersburg Academy, which was founded by his great-grandfather, Dr. Henry Harbaugh, and from Princeton University, Princeton, N. J. He formerly was president of the Annville Stone Co., Hershey, Penn.

ROBERT BRUCE MARSHALL, a director and member of the executive committee of The Bessemer Limestone



## Get power plus\* from your engines

**L**ubricate engines with one of the famous *Texaco Ursa Oils* and you'll get constant full power on any job, *plus*:

**\* Greater work output** — Because *Texaco Ursa Oils* keep vital parts in top condition, your equipment stays on the job longer — you get more work done between scheduled overhauls.

**\* More fuel economy** — *Texaco Ursa Oils* assure proper compression and complete combustion. Thus, you get maximum engine efficiency with minimum fuel consumption.

**\* Low maintenance costs** — The superior lubricating and protective properties of *Texaco Ursa Oils* reduce wear, keep engines running smoother longer. Naturally, maintenance costs go down.

There is a complete line of *Texaco Ursa Oils*, especially refined and processed to make diesel and heavy duty gasoline engines deliver *more power with less fuel* over longer periods between overhauls.

For your air compressors, use *Texaco Regal Oil R&O*. It keeps systems clean, lines clear—assures dependable performance. To prolong service life of wire rope and open gears, use *Texaco Crater* or easily applied *Texaco Crater X Fluid*.

Let a Texaco Lubrication Engineer help you get more from all your equipment. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



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FOR ALL CONTRACTORS' EQUIPMENT

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# INDUSTRY NEWS

## Cover Picture

ON THIS MONTH'S COVER is an air view of the Catskill plant of Alpha Portland Cement Co. at Cementon,



N. Y. This view shows the conveyor system which delivers limestone at the rate of 300 t.p.h. from screening plant to the mill. The conveyor crosses highway 9-W and the West Shore Rail-

way on special overhead galleries. Modernization and enlargement in all production departments, with the exception of cement storage and packing, increased clinker capacity by about one-third. Of particular interest was the replacement of the third kiln with a new 10- x 120-ft. rotary and the installation of a suspension preheater. This is the first installation in this country where a new rotary kiln was engineered and built to specified size and design for operation in connection with a suspension preheater as a unit.

## P. C. A. Receives Award

PORTLAND CEMENT ASSOCIATION, Chicago, Ill., recently received the National Safety Council award for outstanding safety performance for the second straight year. Ned H. Dearborn, N.S.C. president, made the presentation at the opening session of the Association's annual meeting in Chicago in November. The Association also received the award last year and in 1951, the first year it was presented. Receiving the award and plaque for P.C.A. was Walter H. Wulf, president, Monarch Cement Co. and chairman of the Accident Prevention Committee.

For the second straight year, the Association set all-time safety records for the industry in 1954. The 152 member company operations (plants and quarries) set all-time low injury frequency and severity rates of 3.38 disabling injuries per million man-hours worked and .92 days lost and charged per thousand man-hours worked, respectively.

These achievements resulted in the Association membership having the most favorable output-injury ratio in



Walter W. Wulf, right, accepts National Safety Council award for safety presented by Ned H. Dearborn, N.S.C. president, to the Portland Cement Association for outstanding safety work in 1954.

the 39-year history of accident prevention activities. The record ratio of more than 1,000,000 bbl. of portland cement produced per disabling injury in 1954 was 47 percent more than in 1952.

## New Quarry Operation

CLEMENT BROS. CO., Lenoir, N. C., is constructing a commercial crushed stone plant, at a new quarry site at Oakvale, S. C., six miles south of Greenville. The plant will be equipped with more than \$500,000 worth of crushing and sizing machinery, according to C. S. Andrews, assistant to C. E. Clement, president. A railway spur from the Piedmont and Northern Ry., is being constructed to the plant site. More than 30 men will be employed.

## Lightweight Aggregate Plant

PERLITE INDUSTRIES LTD., South Westminster, B. C., Canada, has started operations at a lightweight aggregate plant, processing a siliceous volcanic rock. The plant is located on a 3½-acre tract in Surrey, B. C.

## ROCK PRODUCTS NEW OFFICES

● ROCK PRODUCTS and CONCRETE PRODUCTS, effective Dec. 1, have moved to new, enlarged offices. The address is 79 W. Monroe St., Chicago 3, Ill. The telephone number is Ra-6-2802.—THE EDITORS.

## National Gypsum Sales Goal

NATIONAL GYPSUM CO., Buffalo, N. Y., has set a sales goal of \$176,000,000 for 1956, according to Wade W. Hildinger, general sales director. He states the sales goal can be attained because five new company plants will begin production in 1956. Sales for 1955 have been estimated at about \$150,000,000, against \$126,648,989 in 1954.

Also announced was the appointment of Alfred R. Doll and Raymond A. Kessel as manager and assistant manager, respectively, of the company's new district sales office in Albany. E. Parker Cumings was named assistant manager of the new Richmond, Va., district sales office. Mr. Doll and Mr. Kessel previously worked in Albany, and Mr. Cumings in Buffalo, N. Y.

## Opens Lightweight Aggregate Plant

AGGREGATES & CONSTRUCTION PRODUCTS LTD., Regina, Saskatchewan, has opened a lightweight aggregate plant, costing about \$300,000. The plant will utilize clay deposits nearby to produce an estimated 300 cu. yd. of aggregate daily. The product will be marketed primarily in Saskatchewan. The firm also has announced plans to build a sewer pipe manufacturing plant in the Regina district.

## Venezuela Cement Plant

A NEW \$7.5 MILLION CEMENT PLANT is expected to be completed before the end of 1957 at Chichiriviche (Falcon State), Venezuela. An Italian firm is unloading machinery at Puerto Cabello for shipment to the new plant site. Dock installations are under construction in Chichiriviche to handle medium-sized vessels.

## Cement Plant Expansion

DIAMOND PORTLAND CEMENT CO., Middle Branch, Ohio, has announced plans for a \$4 million expansion program, which will boost annual capacity from 1,400,000 bbl. to 2,400,000 bbl. The program calls for a new plant for crushing, drying, grinding and blending of raw materials, a new kiln equipped with a Humboldt-type preheater and auxiliary equipment, and conversion of existing raw mills to ce-

ment grinding. The new facilities are expected to be completed by June, 1957. The firm has arranged to finance the expansion through sale of 60,000 shares of common stock and with other funds.

During the first nine months of 1955, the company earned \$667,000 or \$2.79 a share on sales of \$3,347,000, against \$2.24 a share on \$2,981,000 sales in the same 1954 three quarters.

### Mid-Winter Meeting

THE EXPANDED CLAY AND SHALE ASSOCIATION will hold its mid-winter meeting, January 24 at the Roosevelt Hotel, New Orleans, La. The association was recently approved by the courts of Pennsylvania as a non-profit corporation, with headquarters at Allentown, Penn.

The meeting will feature a report from the Technical Problems committee, headed by Henry O. Pommer, vice-president, Moss Light Weight Aggregate Co., Memphis, Tenn., stressing recent developments in the field of test research and data for expanded clay and shale lightweight aggregates. A luncheon will be served at noon, followed by a business meeting.

Officers of the association are: William F. Atkins, president; R. A. Utiger, vice-president; Lucas E. Pfeifferberger, secretary-treasurer; and T. R. Berger, executive secretary.

### Portland Cement Production

THE PORTLAND CEMENT INDUSTRY produced 26,938,000 bbl. of finished cement in September, 1955, as reported by the Bureau of Mines. This was an increase of 6 percent over the September, 1954, figure. Mill shipments totaled 29,523,000 bbl., an increase of 2 percent above September, 1954, while stocks were 10 percent less than those on hand the same date in 1954. Clinker production during September, 1955, amounted to 25,892,000 bbl., an increase of 7 percent over the same month of the previous year. The output of finished cement during September, 1955, came from 157 plants in 37 states and Puerto Rico. During the same period of 1954, 25,522,000 bbl. of finished cement were produced.

### Trolley Trucks Used in Quarry

RIVERSIDE CEMENT CO., Riverside, Calif., is planning to use electric trolley trucks to haul limestone at its quarry. The trucks are being supplied by the Kenworth Motor Truck Co. at Seattle, Wash., and the electrical equipment for the trucks is being supplied by General Electric Co. The trucks will be equipped with a cable reel that will permit them to "wander"

from the overhead wire zone. J. W. Brauns, industrial haulage manager, General Electric Co., said the electric trucks are estimated to save the company \$15,000 a year over diesel-powered equipment.

### Plan Phosphate Mine—Plant

CENTRAL FARMERS FERTILIZER CO., Chicago, Ill., owned by 16 midwest co-ops, plans to open a phosphate mine and processing plant near Georgetown, Idaho, costing an estimated \$7,500,000. Processing facilities will include a grinding and calcining plant to convert raw phosphate ores into rock phosphate, for shipment to 22 fertilizer acidulating plants owned by the company. Some of the phosphate will be distributed for direct application, some will be put into mixed fertilizer, and some will be processed to superphosphate. An 8-mile railroad spur will be built leading to the plant site from the Union Pacific main line. Electric power will be furnished by Utah Power & Light Co. Annual production is expected to be about 100,000 tons of processed material from about 500,000 tons of raw phosphate ore mined annually. Joseph J. Lanter is president of the company.

### Plans Cement Plant

PLANS FOR BUILDING a new \$6.1 million, 2500 bbl. per day cement plant at Foreman, Ark., have been announced by a group of 11 Texas businessmen. The group is headed by three Dallas men: R. J. Smith, banker, J. Percival Rice, attorney, and R. J. Bowles, lumber company official. The plant, to be built on a 1740-acre site, will go into operation about January, 1957. There will be no public offering of stock. Kennedy Van Saun Manufacturing & Engineering Corp. will build and operate the plant for a three-year period.

### Marquette Cement Expands

HENRY J. KAISER CO., Kaiser Engineers Div., Oakland, Calif., has been awarded the design and construction contract for a cement plant at Cape Girardeau, Mo., costing about \$7,000,000, by Marquette Cement Manufacturing Co., Chicago, Ill.

The project will add a second separate manufacturing unit with a 1,250,000-bbl. annual capacity adjacent to the existing plant, and will raise the company's total production at Cape Girardeau approximately 71 percent, to 3,000,000 bbl.

Construction is scheduled to start in March, 1956, and be completed within eight months, according to George Havas, vice-president and general manager of Kaiser Engineers Division.

The new plant, which will use the

wet process to manufacture standard portland cement, Type I, will include a 450-ft. long rotary kiln, 12-ft. in dia., which will be fired with pulverized coal at the continuous rate of 200 tons per day.

Other units of the new plant include a clay slurry preparation plant; raw and finished grinding mills; a raw materials storage area with materials handling systems; eight cement silos with an 88,000-bbl. capacity on the Mississippi River, together with barge loading facilities for water transportation to shipping plants in Memphis, Tenn., and St. Louis, Mo.; slurry blending tanks and kiln feed systems; and extensions of railroad trackage.

In addition, the existing plant will be extended with six cement silos of 65,000 bbl. capacity, bulk railroad loading facilities, and a silo feed system for use on the present silos.

### Opens Gypsum Processing Plant

ARIZONA GYPSUM CORP., Phoenix, Ariz., has started operations at a new gypsum processing plant near Winkelman, Ariz. The plant, electrically controlled throughout, replaces all of the crushing and screening equipment formerly used, and includes the addition of pulverizing equipment and a sacker. Plant capacity has been increased to meet the growing demand in Arizona for gypsum as a cement retarder. Bulk and bagged agricultural gypsum are also produced.

### Sargent Bros. Reorganized

SARGENT BROS., INC., Des Moines, Iowa, has been reorganized and the corporate name changed to E. I. Sargent Quarries, Inc. E. I. Sargent continues as president and chairman of the board. New officers are R. E. Sargent, a son, vice-president; R. E. Frampton, treasurer; and B. A. Ferguson, secretary. The change was necessitated by brothers A. E. Sargent and W. I. Sargent withdrawing their interest in the company. The company operates quarries in Iowa, Missouri and Nebraska.

### Two-For-One Stock Split

DIRECTORS OF LEHIGH PORTLAND CEMENT CO., Allentown, Penn., recently approved a two-for-one split of its common stock, converting the 1,901,560 shares now outstanding to 3,803,120. The Board also adopted a resolution authorizing the company to incur \$25 million of long-term debt.

Stockholders will be asked to ratify both proposals at the regular annual meeting on April 18, 1956. At that time, they will also be asked to increase the total authorized stock from 4,000,000 shares to 6,700,000 shares,

and to reduce the par value of each share from its present \$25 to \$15. This will leave the company with approximately 3 million shares of authorized stock which may be issued at the discretion of the Board.

If approved, the split will become effective during the second quarter of 1956. If earnings and business conditions are then favorable, the Board stated that it would hope to place the company's stock on an annual dividend basis of \$1 per share. With adjustment for the split, this will represent an increase of 25 percent over the \$1.60 per share currently being paid. Joseph S. Young, president, stated that this dividend increase, if accomplished, will be due to increased earning power resulting from the company's extensive post-war expansion program. The present payment of 40 cents per share per quarter will be continued through the first quarter of 1956.

### **Expands Rockwool Plant**

BALDWIN-HILL Co., Trenton, N. J., has completed expansion and modernization of its mineral wool insulation plant at Huntington, Ind., formerly known as the Western Rockwool company. Three buildings, including a 35,000-sq. ft. warehouse, a solution and chemical building and a pump building, have been built, and the roof of the main plant was raised 12 ft. to accommodate newly installed equipment. A complete production line for the manufacture of home insulation products and heavy density industrial insulating materials has also been added.

The company also has plants at Kalamazoo, Mich., and Temple, Texas.

### **International Minerals Earnings Set Record**

INTERNATIONAL MINERALS & CHEMICAL CORP., Chicago, Ill., has reported net sales of \$96,485,017 for the fiscal year ended June 30, 1955, the highest in the corporation's history and 3.1 percent higher than last year's sales of \$93,591,934. Net earnings amounted to \$6,321,903 or \$2.55 per share of common stock in 1955, compared to \$6,043,979 or \$2.44 per common share in 1954.

Profits of the Phosphate Minerals Division were ahead of last year, and sales would have reached an all-time high had it not been for the general phosphate strike in Florida. Improved efficiency in mining and beneficiation contributed to the favorable record, according to Louis Ware, president.

Potash Division sales and earnings were higher due to increased shipments from enlarged facilities, although the profit improvement was

somewhat retarded by higher costs in certain operations.

The Industrial Minerals Division continued its steady growth in sales and earnings recorded annually since its formation in 1953. The advance is the result of additional facilities purchased and built, development of new products, and improved operations.

### **Installs Dust Collectors**

NEW ENGLAND LIME CO., Adams, Mass., has installed multiple cyclone dust collectors, manufactured by Dustex Corp., Buffalo, N. Y., on two of its largest rotary kilns. The installation, costing about \$45,000, is said to have reduced kiln dust to less than 800 lb.

daily. The dust collectors are the latest phase of a four-year program, costing approximately \$100,000, to reduce dust at the plant.

### **Zoning Rules Out Plant**

DRAGON CEMENT CO., New York, N. Y., has abandoned plans to build a \$10 million cement plant in North Adams, Mass., according to James H. Ackermann, president. The change follows an adverse zoning decision by the city's planning board.

### **New Office Address**

WARNER COMPANY announces that its new main office is located at 1721 Arch St., Philadelphia 3, Pa.

## **Coming Conventions**

**January 11-14, 1956—**

**American Road Builders' Association, 54th Annual Convention and Exhibit, Miami Beach Auditorium, Miami Beach, Fla.**

**January 23-25, 1956—**

**National Concrete Masonry Association, 36th Annual Convention, Roosevelt Hotel, New Orleans, La.**

**February 13-16, 1956—**

**National Sand and Gravel Association, 40th Annual Convention and Biennial Show, Conrad Hilton Hotel and Chicago Coliseum, Chicago, Ill.**

**February 13-16, 1956—**

**National Ready Mixed Concrete Association, 26th Annual Convention and Biennial Show, Conrad Hilton Hotel and Chicago Coliseum, Chicago, Ill.**

**February 15-17, 1956—**

**National Agricultural Limestone Institute, Blackstone Hotel, Chicago, Ill.**

**February 20-22, 1956—**

**National Crushed Stone**

**Association, 39th Annual Convention and Exposition, Conrad Hilton Hotel, Chicago, Ill.**

**February 20-23, 1956—**

**American Concrete Institute, 52nd Annual Convention, Bellevue - Stratford Hotel, Philadelphia, Penn.**

**February 22-23, 1956—**

**Iowa Agricultural Limestone Association, 11th Annual Convention, Savery Hotel, Des Moines, Iowa.**

**Feb. 27-March 2, 1956—**

**American Society for Testing Materials, Committee Week, Hotel Statler, Buffalo, N. Y.**

**March 6-10, 1956—**

**American Concrete Pipe Association, 48th Annual Meeting, The Broadmoor, Colorado Springs, Colo.**

**April 12-14, 1956—**

**American Concrete Agricultural Pipe Association, Sixth Annual Convention, Brown Palace Hotel, Denver, Colo.**

# HINTS

## AND HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

### Belt Conveyor Plow

TO DIVERT SAND carried on a 30-in. belt conveyor to a by-pass chute (thus by-passing a rinsing screen), a Mid-western sand and gravel producer uses an 8-in. plow illustrated herein. The belt is flattened at the blade by means

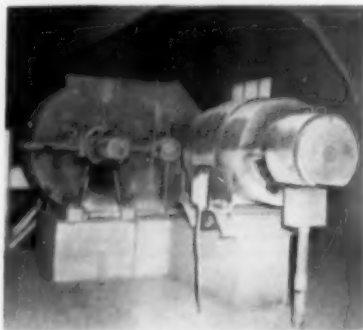


Plow on 30-in. belt conveyor

of four small-diameter conveyor pulleys, thus effecting a good contact between blade and belt.

### Step Starter for Motor

THIS CONVEYOR DRIVE INSTALLATION is used at a large midwestern crushed stone plant to drive a 60- x 1050-ft. belt conveyor. The drive consists of a 300-hp., 4160-volt, 1160 r.p.m. Westinghouse wound rotor motor and Link-Belt herringbone speed reducer.



Motor with step starter for conveyor drive

The motor has a step starter which permits a gradual increase in torque during starting and limits the maximum torque to less than 150 percent of normal. This feature promotes long belt life. Note use of roller bearings for bend pulley shaft on left; these have longer life and are more easily maintained than friction bearings.

### Emergency Belt Stop

AS A SAFETY FEATURE, emergency stop cords are installed on all belt conveyors used at the Presque Isle Corp. fluxstone plant at Presque Isle, Mich. The cords are conveniently attached along the conveyor frame, within easy reach of the worker. The cord, consisting of  $\frac{3}{8}$ -in. 6 x 19 galvanized steel cable and extending the

entire length of each conveyor, is attached to a counterweight which throws a lockout switch. An important feature is that the conveyor cannot be started again until the emergency switch is manually reset.

On long conveyors the switches are spaced about 250 ft. apart. Using a greater spacing would make it difficult



Emergency stop cord, counterweight, and switch on a conveyor belt

for the cable to release the counterweight.

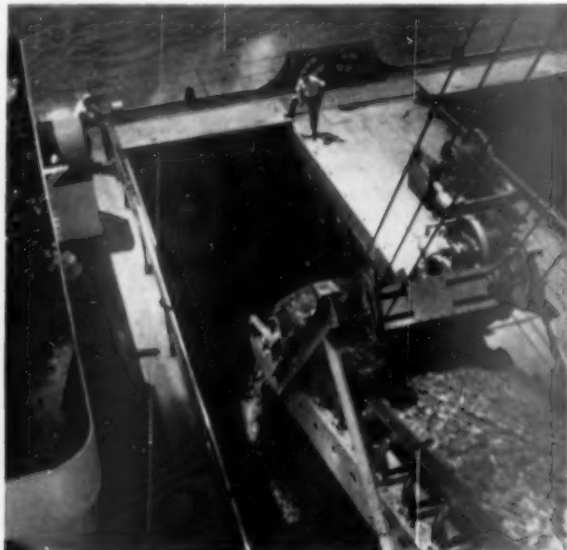
Also note the use of rubber impact idlers at the conveyor loading point.

### Travelling Boat Loader

PRESQUE ISLE CORP. has a unique boat loader in service at its fluxstone plant at Presque Isle, Mich. The load-



Left: Self-propelled shuttle boom boat loader, which has a capacity of 4500 g.t.p.h. Right: Fluxstone being discharged into cargo hold by the 72-in. shuttle boom conveyor





er, which has a capacity of 4500 gross tons per hour, is a self-propelled trussed frame having a traversing speed of 75 f.p.m.; it is moved along the dock from hatch to hatch while the boat is moored in a fixed position. Stone is delivered to the loader on a 60-in. belt conveyor, and transferred to a 72-in. (102-ft. centers) shuttle boom conveyor mounted on the loader at right angles. The latter conveyor is hinged at the midpoint so that the lower section can be boomed down to a maximum of 18 degrees from the horizontal, thereby allowing the conveyor to extend partly into the ship's hold. This reduces the stone fall, minimizing breakage. The shuttle arrangement permits the vessel load to be trimmed.

The entire boat loading operation is push-button controlled by one man stationed in a glass-enclosed cab projecting from the loader over the dock. The operator has full view of the ship, dock, and dock conveyor system. The boat loader was designed by McDowell Company and fabricated by Wellman Engineering Co., a subsidiary firm.

### Screening Efficiency

TO PROMOTE SCREENING EFFICIENCY of open hearth stone (10 x 5½ in.) and to check degradation of material



**Belt flaps** on 6- x 14-ft. screen promote efficient screening

in screening, a large midwestern flux stone producer has installed conveyor belt flaps over the 6- x 14-ft. double-deck screens. The installation consists of four 30-in. flaps suspended from above, two to a hanger, with two slits cut into each flap.

### Portable Crushing Plant

AN EASTERN CRUSHED STONE FIRM operating two permanent stone plants also operates a Cedarapids portable crushing plant to produce special sizes. The plant, incorporating a jaw crusher, roll crusher, and vibrating screen, is shuttled back and forth between the



**Portable crushing plant** turning out minus 2-in. sub base stone

two quarries. Principal products include road base stone, ¾-in. chips, and agricultural limestone. At the company's trap rock quarry, a minus 2-in. road base stone is produced from the weathered traprock overburden, which is bulldozed over the quarry face to the floor.

### Devise Spring Type Dropball Connection

THE BLAIR LIMESTONE DIVISION of the Jones & Laughlin Steel Corporation at Martinsburg, W. Va., has devised a new device to lessen the shock transmitted from the dropball to the cable of an Osgood-General 825 Mobilcrane.

It consists of two long U-bolts placed through a large spring taken from a vibrating screen. On each end of the U-bolts a plate and retaining nuts were used with heavy duty swivels connected to the eyes or bent ends of the U-bolts. The cable was hooked to the top U-bolt and an alloy steel chain



**Crane equipped with new drop ball connection** at the moment of drop ball impact. New connection reduces shock

was hooked to the bottom U-bolt. Finally, into the dropball itself was welded an eyelet to which the chain is connected by a clevis.

With this arrangement the company has found it possible to use plastic



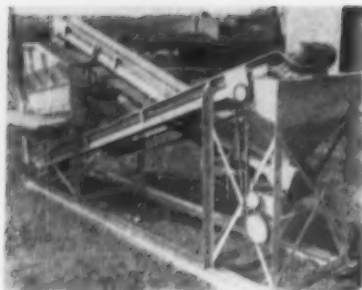
**Close-up of drop ball connection** designed to lessen shock at impact

cord cable, cheaper than wire cable which is specifically wound for dropball work. The swivels prevent the cable from twisting as the dropball spins.

The U-bolts and spring take up the shock of raising and lowering the ball. The alloy steel chain is necessary to prevent breakage. This new hook-up has enabled the company to work for two months without attending to the spring-and-swivel arrangement.

Purchased in July, 1954, the Osgood-General 825 has been already put to extensive use in dropball work. Equipped with a 60-ft. boom and a 4-ton dropball, the machine moves all over the quarry to handle secondary breakage chores.

# NEW MACHINERY



## Feeder-Separator

UNIVERSAL ENGINEERING CORP., 625 C Avenue, N. W., Cedar Rapids, Iowa, will display the "Wobbler Feeder" at the National Sand and Gravel and at the National Crushed Stone shows at Chicago in February. The feeder combines the dual function of feeding and scalping, in a single unit, and reduces headroom by as much as one-third. The "Wobbler bed" is a row of elliptical-shaped manganese steel bars positioned alternately vertical and horizontal to absorb heavy shock loads. The design of the feeding and separating bars imparts a rocking, tumbling motion to the materials. Fines pass through the Wobbler bars to a belt conveyor while the oversize is "wobbled" for removal of adhering material and fed to either end.

The machine can be installed at an incline for a bigger hopper load and the material fed uphill. Uphill feeding "holds back" oversize for a more thorough cleaning when working in wet materials. Choke-loading is said to increase the effectiveness of the unit. Gravity causes some fines to pass immediately, forces the load into contact with the Wobbler bars, but the crowding, pushing action of the material itself moves the load forward.



## Industrial Wheel Tractor

INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill., has brought out a rubber-tired 42-hp. wheel tractor, the International 300 Utility Model, powered by an IH C-169 gasoline engine. It is available

either in a standard five-speed transmission or Torque Amplifier drive which has 10 speeds forward from 1.5 to 16.7 m.p.h. With the Torque Amplifier, continuous power is supplied to drive wheels even when changing tractor speeds. The tractor is also available with a power take-off, independent or transmission driven, and a Hydra-touch equipment control permitting front and rear-mounted attachments to be controlled simultaneously or individually. Specifications include: 75-in. wheelbase; overall length, 118 in.; overall width, 59½ in.; rear axle clearance, 19½ in.; front axle, 20½ in.; and a 9-ft. 8-in. turning radius.



## Magnetic Brake Size Reduced

STEARNS MAGNETIC, INC., Milwaukee, Wis., has announced the H Style 1200 Series magnetic brake for use in the 50 to 100 hp. range. Design improvements have reduced brake dimensions without decrease in torque rating; up to 5¾ in. less clearance is required for housing removal. The diameter has been reduced 2 in. and the brake length has also been shortened. The brake may be supplied for motor or floor mounting and may be arranged to operate on a-c or d-c. Four torque ratings are available: 230, 345, 460 and 575 lb./ft.

## Carbide Stone Cutting Blanks

GENERAL ELECTRIC CO., Carbology Dept., Detroit, Mich., has brought out a line of carbide stone cutting blanks specifically designed for tipping stone cutting tools used for cutting granite, marble, slate, sandstone and limestone. The blanks are made in a wide variety of standard shapes and sizes. Styles

which generally fit into a slot or milled recess are made with negative tolerances, to permit such tools to be machined with a standard width milling cutter or slotting saw so the blanks will be of correct thickness to provide proper braze. Other stone-cutting blanks of non-standard carbide grades, shapes or sizes can be made to order.



## Portable Batch Type Plant

HETHERINGTON & BERNER INC., 701 Kentucky Ave., Indianapolis 7, Ind., has brought out a completely portable batch type asphalt plant, with a capacity range of 100 to 120 t.p.h. Designed the H & B Mobile 40, it is designed for ease of erection and flexible set-up arrangement, all units being wheel mounted. Piping and wiring are permanently installed, with quick disconnects. There are no shafts, chains, gears or universal joints, and all remotely located units are driven with electric motors.



## Heavy Duty Truck Series

MACK TRUCKS, INC., 350 Fifth Ave., New York, N. Y., has brought out the B-80 line of heavy-duty trucks, consisting of 11 models, featuring large section heat-treated alloy steel frames which are double-channelled from end to end. On long wheelbases, heavy fishplating is available where required. Exposed radiators with bolted top and bottom tanks have extra strength flat top fenders which can be used as steady working platforms.

A choice of either gasoline engines ranging from 170 to 300 hp. is featured, including the Thermodyne turbocharged diesel engine with a 205-

hp. rating. A choice of wheelbases and gear ratios is given, including transmission from five to the 20-speed Quadruplex, as well as five-speed transmissions coupled with three-speed auxiliaries.

Four-wheel models have a dual reduction rear axle with radius rods and torque rods, while the six-wheelers use large-capacity balanced bogies in two sizes. A Mack Power Divider type inter-axle differential is used on the six-wheel models, eliminating wheel slipping and spinning, delivering torque to each axle in proportion to traction.



### Rubber-Lined Pump

KANSAS CITY HAY PRESS CO., 801 Woodswether Rd., Kansas City, Mo., has announced Model "RU", a recently developed pump, rubber-lined, for the handling of silica sand, glass sand, coal silt and other abrasive slurry which is handled hydraulically. No adjustments are said to be necessary after the pump is once assembled and clearances set and locked. Maintenance is reduced to periodic greasing of the bearings and adding of packing as required. The rubber lining is reported to last longer than hard, alloyed metals when proper operating conditions are followed. A stainless steel shaft is used to withstand wear and corrosion, and to prevent bearings from becoming "frozen" to the shaft due to outdoor exposure.

### Iron Powder Electrode

THE LINCOLN ELECTRIC CO., Cleveland, Ohio, has announced the "Improved Fleetweld 47", an all-position, iron powder type electrode. The electrode is designed for high speed welding of mild steel, with ease of operations in all positions on either a-c or d-c welding current. Powdered iron is included in the coating to produce higher deposition rates. The coating is also said to produce greater footage per electrode. The electrode conforms

to AWS class E-6013, and is suited for welding out-of-position joints in manufacturing all types of machinery, and for welding A.S.M.E. U-69 and U-70 pressure vessels under insurance requirements. It is available in sizes from 1/8 in. to 5/16 in. diameters.



### Chain Repair Link

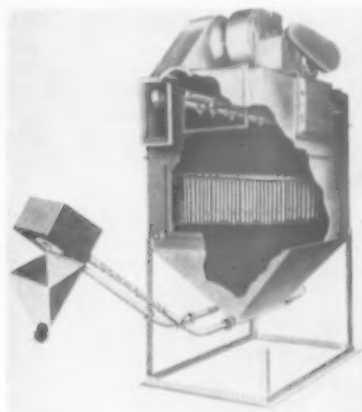
PAGE ENGINEERING CO., Clearing Post Office, Chicago 38, Ill., has developed the "Twin-Pin" connecting link for strong, easy-to-use chain repairs. Formed of two interlocking and identical halves, each half is inserted through the ends of the two sections of chain to be joined together. The link is then slipped together into its locking position and two oval pins are driven into place. A U-shaped key pin is then inserted into the oval pins which holds them securely in place. The open ends of the U-pin are then hammered or clinched together to form the repair link. The links are available in a range of sizes from 1 to 3 in. End links with "Twin-Pin" fittings are available in 1 1/2-, 1 3/4- and 2-in. sizes.



### Wet Reagent Feeder

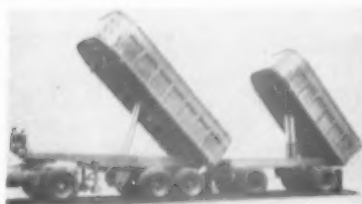
DENVER EQUIPMENT CO., P. O. Box 5268, Denver 17, Colo., has announced the Model 12-A wet reagent feeder with a 1/20-hp. motor and a 100 to 1 ratio speed reducer to provide unvarying speed of disc rotation. A stainless steel float valve moves freely, is corrosion-resistant and permits quantity storage of reagents for continuous, uniform operation. The

drop trough has greater capacity and is designed to make a finer adjustment in the low capacity range. The trough adjustment indicator permits a visual check of the trough setting without removal of the lightweight aluminum cover. The entire feeder is protected from foreign material. Optional features such as duplex feeders, acid-proof construction, and heating units can be supplied.



### Dust Control Unit

THE JOHNSON-MARCH CORP., Philadelphia, Penn., has developed a dust control unit that is said to remove microscopic solids, fumes and odors from exhaust gases at 99 percent efficiency with dust loadings at five grains per cu. ft. and 70 percent efficiency below five micron particle size. The unit, known as the Type A Hydro Precipitator Scrubber, hydro-compresses exhaust gases through a system of multiple tubes into a water chamber, producing a scrubbing action. The scrubber is available in 15 sizes for capacities ranging between 500 c.f.m. and 40,000 c.f.m. Sludge can be removed constantly or intermittently by manual, hydraulic or mechanical means. Constant flushing of the interior prevents build-up of solids on internal surfaces and components. There are no moving parts to maintain or replace.

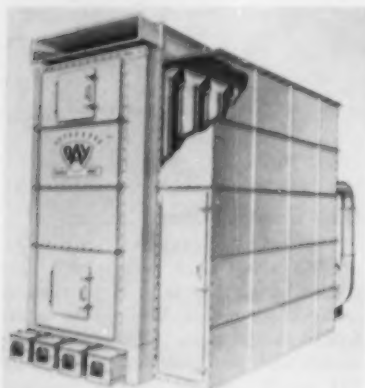


### Tandem Axle Trailer Dump

GALION ALLSTEEL BODY CO., Galion, Ohio, has announced a tandem axle trailer dump, Model STM (SP),

for use with single axle tractors and equipped with a self-powered hydraulic hoist. Designed for materials hauling in mixed fleets, the unit is fitted with a complete hydraulic system, including Duo-scope hoist cylinders, powered by a 15-hp., two-cylinder, air-cooled gasoline engine. A clutch-equipped gear reduction unit, mounted as a part of the engine assembly, drives a hydraulic pump through a short drive shaft. Electric starting is offered as optional equipment.

Similar to the Model STM Transporter trailer dump in design, construction and payload capacities, Model STM (SP) has capacities ranging from 10 to 36 cu. yd. and 24 to 34 tons. The above illustration shows the unit with the Model HH Hitchhiker.



### Dust Filters

THE DAY CO., 810 Third Ave., N.E., Minneapolis, Minn., has introduced the improved model "AC" Reverse Jet (Hersey-type) dust filter with a newly designed housing featuring a walk-in access door and two inspection doors. The design is aimed at speeding inspection of the operating mechanism. Small access doors are located at the top and bottom of the filter chamber for periodic lubrication and inspection of the gearmotor drive which operates the reverse jet air pressure blower and screw conveyor discharges.

### Diesel-Powered Trucks

INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill., has added nine diesel-powered trucks to the specialized heavy-duty line manufactured by the motor truck division. The models include four in the four-wheel RD-220-H series, three in the six-wheel RDF-210-H series, and two six-wheel off-highway models, the RDF-214-H and RDF-230-H. Standard power plant in the models is the

HRB-600 Cummins engine, developing 165 hp. The clutch is 14-in., two-plate, and transmission is five-speed direct-in-fifth. The bumper to center of front axle dimension has been increased by approximately 12-in. to accommodate engine length, while AC, CA, and wheelbase dimensions remain the same as for comparable gasoline-powered models. Diesel engine, wheelbase, transmission, rear axle, brake, chassis, and electrical equipment options are available.



### Re-Designed Cement Packages

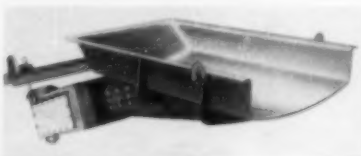
HURON PORTLAND CEMENT CO.'s complete line of cement products packages have been re-designed by Union Bag & Paper Corp., New York, N. Y., combining a number of improvements. The horizontal band with the brand name "Huron" has been raised nearer to the top of the bag making it easier to be seen and read. The product name "Cement" and the product type designation "Regular" etc., have been brought together so they now read as a unit. The same color schemes have been retained for the various products; however, in some instances brighter colors have been used. In all, the new package design provides better legibility and attention value.



### Heavy Duty Motor Grader

ALLIS-CHALMERS MANUFACTURING CO., Tractor Group, Milwaukee, Wis., has introduced the "Forty-Five" motor grader, a heavy-duty unit powered by the ADS-516 six-cylinder, four-cycle diesel engine with a rated 120 maximum brake hp. at 1600 r.p.m. A finger-tip control box with toggle-type linkage provides increased leverage

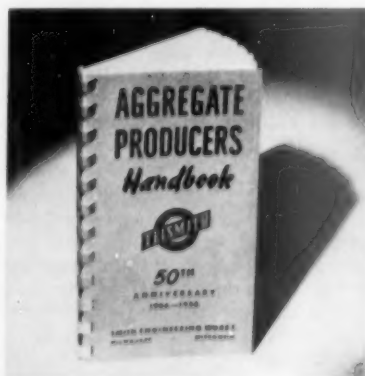
for smoother operation of moldboard, wheel lean and scarifier. In addition to power steering, hydraulic brakes for the tandem wheels, mechanical parking brake, leaning front-wheel axle, and other standard equipment, special equipment such as 10 and 14-ft. moldboards, blade extensions, bulldozer, special tire equipment, etc. are available.



### Vibratory Feeder

SYNTRON CO., 450 Lexington Ave., Homer City, Penn., has brought out the F-55DT vibratory feeder, featuring an optional dust-tight design for protection against dusty atmosphere and supply hopper spillage. The magnet and leaf springs can be totally enclosed—leaf spring ends covered on each side of the base casting, a metal plate covering the armature and core. All plates are bolted to the magnet casting against sealing gaskets.

Equipped with a 48- x 60-in. flat pan trough, the feeder has a maximum capacity of 500 t.p.h. A separate controller box for wall mounting is provided, and material flow can be regulated over a wide range by adjusting the dial on the controller box.



### Aggregate Producers Handbook

A NEW AGGREGATE PRODUCERS HANDBOOK is just off the press. This 124-page book will be distributed with the compliments of its publishers, the Smith Engineering Works of Milwaukee, Wis., manufacturers of Tel-smith equipment for quarries, gravel plants and contractors. This handbook is made up of material collected during a period of many years, and was



edited by Donald D. Barnes, president of Smith Engineering Works.

This helpful handbook contains in one handy quick-reference manual very complete information on aggregates and aggregate production machinery, including engineering data, very useful tables and charts, all assembled from authoritative sources.

Copies may be obtained by signing a card at the Smith Engineering Works booth at the National Sand and Gravel or the National Crushed Stone Association conventions at Chicago in February. Copies will be mailed. A request to Smith Engineering Works, Milwaukee 1, Wis., on company letterhead, stating position, will bring a copy with the compliments of Tel-smith.



### Portable Crushing-Screening

PIONEER ENGINEERING WORKS, INC., 1515 Central Ave., Minneapolis, Minn., has introduced a portable crushing and screening plant, the 120 JS, for use in the intermediate crushing stage of gravel and stone. When used between a primary and a secondary unit, it permits either feeding of larger material to the primary, or increasing production by means of smaller stages of reduction in each of the primary, intermediate and secondary stages. The plant may also be used as a primary unit in itself, with a portable apron feeder or a portable feeder conveyor, where pit-run is suitable.

The plant consists of a 4- x 8-ft. two-deck Mesabi-type vibrating screen mounted ahead of a 2036 jaw crusher, with two delivery conveyors. Secondary spring suspension of the vibrating screen virtually eliminates transfer of screen vibration from the screen frame to the plant itself. The screen is a four-bearing, positive-throw, eccentric type, with  $\frac{3}{8}$ -in. throw and a 10 deg. slope. The top deck is available with either a  $\frac{1}{2}$ -in. thick punched steel plate or heavy wire mesh, and the bottom deck in wire mesh, openings in both decks as specified. Power for the screen is from a  $7\frac{1}{2}$ -hp., 1800 r.p.m. high torque electric motor.

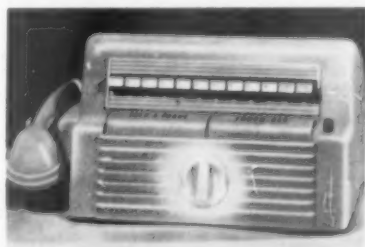
The end delivery conveyor is a 30-in. x 20-ft. 6-in., channel frame, folding type, anti-friction bearing unit with 4-in. dia. rolls, and is powered by a 5-hp. electric motor. The side delivery sand conveyor from the fines

hopper is 24-in. x 8-ft., and has a 3-hp. electric motor. The main truck has a channel frame, rear axle equalizer, 12 pneumatic tires and stabilizer jacks under the main frame. A semi-trailer hitch and hydraulic rear-wheel brakes are optional.



### Truck Cranes

LINK-BELT SPEEDER CORP., Cedar Rapids, Iowa, has brought out five truck-crane models, ranging from  $12\frac{1}{2}$  to 35-ton lifting capacity. Called "Zephyrcranes," the models feature Speed-o-Matic hydraulic control and power hydraulic operated clutches that are self-compensating for heat and normal lining wear. The units are convertible to standard front-end attachments, and are available with torque converter power units. All are mounted on specially designed carriers with full-floating walking beam rear axle supports that allow travel over uneven terrain. Also available are screw-type outrigger jacks and pontoons, and removable rear outriggers. Speed-o-Matic reversing clutches are available on all models as an extra, for either or both main drums to permit power controlled load lowering of main hoist line and jib whip line.



### Plant Inter-Communications

TALK-A-PHONE CO., 1512 S. Pulas-ki Rd., Chicago, Ill., has introduced an "Automation" Super-Chief inter-communication system providing two-

way "private" conversation between stations without the use of controls at either station during conversation. The system is operated automatically by your own voice, eliminating the need for controls. Available in 10-station capacity (Model ACS-7110) and 20-station capacity (Model ACS-7120), it permits conferences between as many as four stations without interference from any other station. The unit also features automatic traffic control, which visually indicates at your station whether the station you have selected to call is "busy;" whether the station is "not busy;" or "in conversation," by the use of red, green and amber translucent glows. The traffic control permits your voice to be transmitted when it shows a line-clear signal; stops it on the busy signal.



### Prospecting Drill

HOSSFELD MANUFACTURING CO., Winona, Minn., has brought out a direct motor driven prospecting drill, for use in prospecting for uranium, valuable minerals, coal, iron, bauxite and clay. Hard and soft formations may be drilled, with the exception of granite-hard rock. Screw-on, detachable rock bits in standard 1-in. thread, stock sizes from  $1\frac{3}{4}$ - to  $2\frac{5}{8}$ -in., fit the drill steels. Holes can be drilled and samples taken continuously, and the portable machine moved to the next test drilling. Cuttings and water are brought up through the hollow drill steel by a bit check valve for continual assay at any depth, with little loss of water, cuttings or silting. Accurate depth of formation and depth of ore body plus accurate samplings of underground deposits as deep as 110 ft. are said to be attained.



Airplane view of Arizona Sand and Rock Co. plant near Phoenix, Ariz. Sand processing includes use of sand sizers, liquid cyclones, spirals, and rod mills. Company also is a large ready-mixed concrete producer

## AGGREGATES and CONSTRUCTION

THE YEAR JUST ENDED saw the establishment of a new dollar volume record for construction, which reflected in proportionate increases for producers of construction materials. When final figures for shipments of aggregates are compiled, the all-time tonnage records set in 1954 for sand and gravel and crushed stone will be out of date, likely by five percent or slightly more. The portland cement industry, gypsum, concrete masonry and ready-mixed concrete industries also established new production records.

Branches of the rock products industries not tied so closely with construction have also enjoyed a good year for business overall. Their customers, including the steel and chemical industries and manufacturers of myriad

products, have had a prosperous year, with proportionate increases in their requirements for raw materials supplied by the rock products industries.

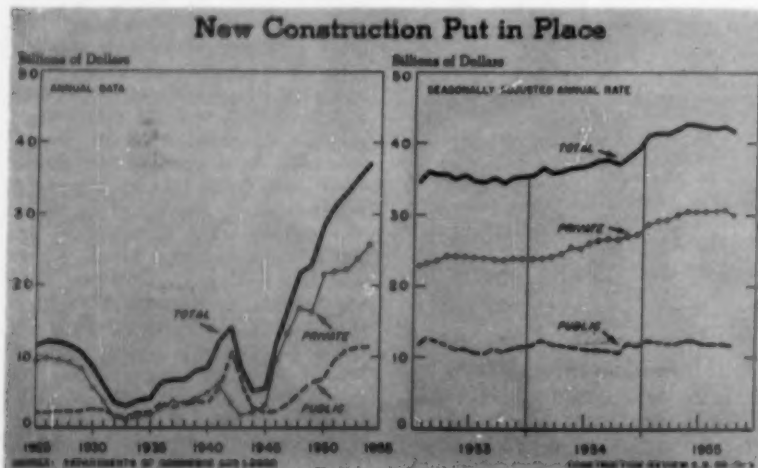
Agriculture has been the one weak spot as far as the rock products and concrete products industries are concerned. Reduced farm income has shown up in the performance of some producers depending on farm construction markets and has contributed to the decline of agricultural limestone tonnage spread the last few years. However, the removal of other obstacles to the liming program and a more favorable A.C.P. program add up to an increased tonnage of liming materials in 1956.

The lack of soil testing facilities under the mandatory soil testing pro-

gram and acreage allotments retarded liming under the A.C.P. program in fiscal 1953 and 1954 and one result was that millions of dollars of available government funds went unspent. Acreage allotments are being removed as obstacles to the use of liming materials under the A.C.P. and in some states the minimum tonnages recommended for application per acre are being raised. This change plus removing the soil testing bottleneck and the permissible use of liming in the renovation of old pastures, along with an overall improved A.C.P. program, should appreciably increase sales of liming materials in 1956.

In general, producers of all types have expressed satisfaction with their 1955 business and optimism for the year ahead. However, peak capacity with increased operating efficiency has had to be the goal in order to realize a reasonable profit. Costs for labor, equipment and supplies have continued on the upgrade through 1955 and will increase further in 1956. Prices have not increased proportionately except in a comparatively few instances.

Competition for business continues to be intense in most areas, despite the high demands for products of the industry. Construction contractors are buying on price and many producers of aggregates and other materials are increasing their volume of sales through extra-shift operations. Volume alone cannot compensate for cost increases indefinitely, however, and it appears that a great number of producers will increase prices in 1956.



• Price structure must be increased to maintain profits in 1956 when it is anticipated production will reach a new high. Improved public relations a major need

By BROR NORDBERG



Interesting shuttle conveyor gallery installation operated by Huron Portland Cement Co. to stockpile clinker over 600 ft. long reclaiming tunnel conveyor. Storage capacity is 1,500,000 tons

## Volume Establishes A New Record

All these industries and particularly producers within and closeby metropolitan and suburban areas have been the object of complaints and subject to more restrictions on their operations than ever before this past year. As cities spread out and suburbs develop, this problem is becoming more and more acute. Complaints are threatening the very right of many producers to exist. Too often, community officials are sympathetic to any and all complaints with the result that restrictive and unrealistic zoning ordinances are enacted. The mad scramble for property is becoming a very serious threat to reserves of raw materials and to future expansion of operations.

These industries because of their very nature are prone to be considered as undesirable neighbors. This unrealistic appraisal stems from the fact that these industries are not understood or appreciated by the average individual and by many public officials.

Their importance to the individual, the community and the nation's economy adds up to a powerful story that must be put across and be backed up by evidence of action to remove causes of real complaints, in order to become accepted and properly respected.

Emergencies like the prolonged strike of producers in southern California because of unjust pension demands by the Teamsters Union (see editorial page, December, 1955) can and are being used to get the industry story across. When a strike called against these producers results in the lay-off of thousands of men due to stoppage

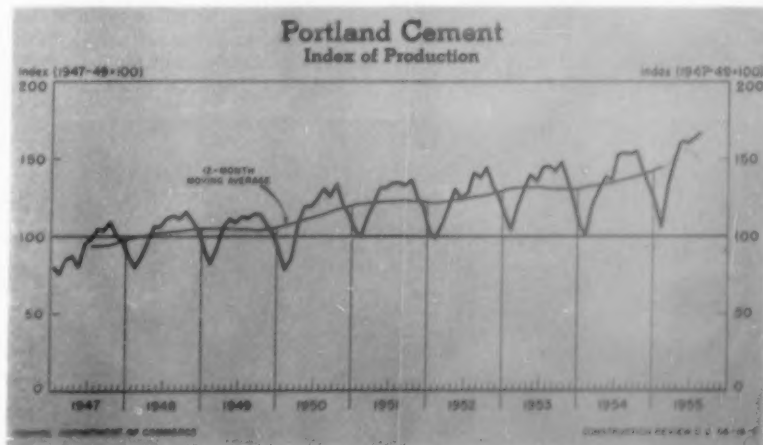
of hundreds of millions of dollars worth of construction, the entire area has become aware that the industry is mighty important.

The approach must be to get such facts across, through a continuing program of public relations, to build the importance of producers to everyone concerned and not let them forget it. These industries are substantial employers of men, have more than the average investment for all industry in order to make a job for a man and spend enormous sums for payrolls, supplies and machinery. Why not talk about it?

Public relations is such an important phase of the industry that we attempt herein to bring out some facts on the subject. Figures which we present are for the purpose of making

employees aware of the fact that someone must put up capital to make their jobs, and to make localities aware that the industries they are inclined to despise have made large capital investments to give employment to their citizens.

It is hoped that our summaries herein provide valuable data and suggest an approach to a most serious problem. We hereby express our appreciation to the many of our subscribers who supplied us with data on the subject and who also commented generously in answer to our year-end request for information on business conditions and other matters. Our summaries for the ready-mixed concrete and concrete products industries are published in the CONCRETE PRODUCTS section of this issue.





(Value, in millions of dollars)

Type of construction	1953	1954	1955	1956	Percent change, 1955-56
<b>Total new construction</b>	<b>35,771</b>	<b>37,577</b>	<b>42,000</b>	<b>44,000</b>	<b>+ 5</b>
<b>Private construction</b>	<b>23,877</b>	<b>25,768</b>	<b>30,000</b>	<b>30,850</b>	<b>+ 3</b>
Residential building (nonfarm)	11,930	13,496	16,345	16,200	- 1
New dwelling units	10,555	12,070	14,765	14,300	- 3
Additions and alterations	1,375	1,426	1,580	1,900	+20
Nonhousekeeping	267	296	350	400	+14
Nonresidential building (nonfarm)	5,680	6,250	7,650	8,700	+17
Industrial	2,229	2,030	2,400	2,800	+17
Commercial	1,791	2,212	3,045	3,475	+14
Warehouses, office and loft buildings	739	950	1,125	1,225	+ 9
Stores, restaurants and garages	1,052	1,254	1,920	2,250	+17
Other nonresidential building	1,660	2,008	2,185	2,425	+11
Religious	472	593	740	850	+15
Educational	426	529	500	525	+ 5
Social and recreational	163	228	245	275	+12
Hospital and institutional	317	337	350	350	0
Miscellaneous	282	321	350	425	+21
Farm construction	1,731	1,560	1,400	1,350	- 4
Public utilities	4,416	4,341	4,465	4,450	(2)
Railroads	442	353	340	400	+18
Telephone and telegraph	615	655	700	775	+11
Other public utilities	3,359	3,333	3,425	3,275	- 4
Local transit	30	25	25	25	0
Pipelines	271	300	325	350	+ 8
Electric light and power	1,829	1,900	1,800	1,700	- 6
Gas	1,229	1,108	1,275	1,200	- 6
All other private	120	121	160	130	- 6
<b>Public construction</b>	<b>11,394</b>	<b>11,809</b>	<b>12,000</b>	<b>13,150</b>	<b>+10</b>
Residential building	556	536	250	273	+10
Nonresidential building	4,346	4,641	4,220	4,225	(2)
Industrial	1,771	1,506	705	475	-33
Educational	1,714	2,134	2,450	2,700	+10
Hospital and institutional	365	365	330	275	-17
Other nonresidential building	496	636	735	775	+ 5
Military facilities	1,307	1,030	1,320	1,500	+14
Highways	3,160	3,750	4,100	4,600	+12
Sewer and water	883	982	1,080	1,200	+11
Miscellaneous public-service enterprises	200	218	280	500	+79
Conservation and development	830	704	600	675	+13
All other public	112	148	150	175	+17

1 Joint estimate of the U. S. Department of Labor and the U. S. Department of Commerce.

2 Change of less than one-half of 1 percent.

New construction in continental United States, 1953-55 and outlook for 1956

## Construction

The construction industry is now by far the largest industry in the United States, representing 15 percent of the gross national product. It concluded 1955 with its tenth consecutive record year in dollar volume with \$42 billion of new construction according to the *Construction Review* published jointly by the U. S. Department and U. S. Department of Labor. Again, the figure exceeded most estimates made at the start of the year. Expenditures for new construction are expected to total \$44 billion in 1956, for an increase of five percent. The increase will be about 17 percent compared with 1954 expenditures.

The estimate for 1956 is backed up by other authoritative sources, some of which predict that there will, in addition, be more than \$21 billion spent

for remodeling, repair and maintenance of existing structures. The total overall increase in construction would be \$3 billion in 1956 according to most sources. The government sources predict a slight rise in private outlays for non-residential building like stores and churches and a 10 percent expansion in public construction which would be the largest in four years. Gains will be in all categories with greatest increases in highways and schools. A drop from 1,300,000 housing starts to 1,200,000 is estimated but a trend to larger and better houses means that dollar outlays in 1956 will not decrease as much as the number of starts.

The decrease in housing in 1956 will more than be offset by increases in commercial and industrial building. Industrial building will total a record \$2.8 billion due to a 14 percent rise

in industrial output, good long-range prospects and high profits being realized. Commercial building is expected to increase for the fourth consecutive year to \$3.5 billion for an increase of 14 percent over 1955. Religious construction will establish an \$850 million record in 1956, and the balance of private construction is expected to maintain 1955 levels. Total private construction activity is expected to be little over the \$30 billion record year of 1955.

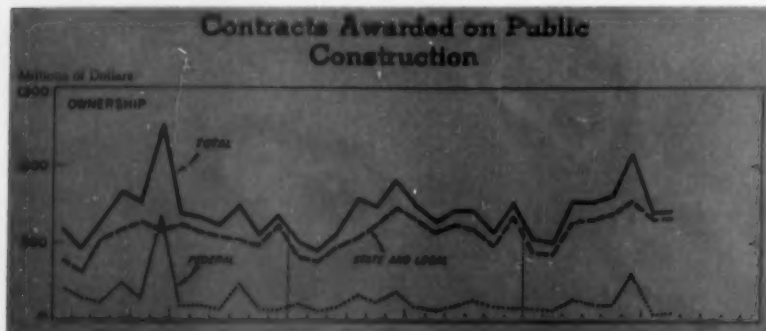
Public utility construction will decline somewhat but railroad construction is on the increase. Farm construction is expected to decrease.

New highway construction is expected to increase by one-half billion dollars in 1956 to \$4.6 billion, which is half the rate of needed construction.

Actually, the rate of highway expenditures by all levels of government was about \$7½ billion in 1955 including repair, maintenance, interest, etc. The demand for greatly expanded highway building will undoubtedly result, either in the coming Congress or soon thereafter, in legislation and appropriations because of the unquestioned need. The matter of financing must be settled and that would not be so difficult if federal funds from highway users were all used for highway building. It has been estimated that such revenues are sufficient to pay for one-half the increased building that the President sought through his \$101 billion highway proposal, assuming that the income would increase over the years because of greater highway use. Anticipated greater highway building, maybe under a long-term bill, is one of the bright spots in the long-range outlook for construction.

A ten percent increase in public school construction to \$2.7 billion is far short of the minimum needs. The backlog of needs for sewer and water facilities is estimated at \$25 billion over the next ten years and, for 1956, the rate of construction will be \$1.2 billion. Conservation and development is estimated to increase by 13 percent in 1956 due to the St. Lawrence Seaway and increased work by the Corps of Engineers and the U. S. Bureau of Reclamation. Public housing will gain a little while the construction of hospitals and federal industrial building will decline.

Work is to be resumed on 109 major projects by the Corps of Engineers and Bureau of Reclamation, with approval of Congress, and is expected to accelerate year by year, contributing to the long-range favorable outlook for construction. The total need for federal public construction is estimated to exceed \$200 billion over a 10-year period, including highways,



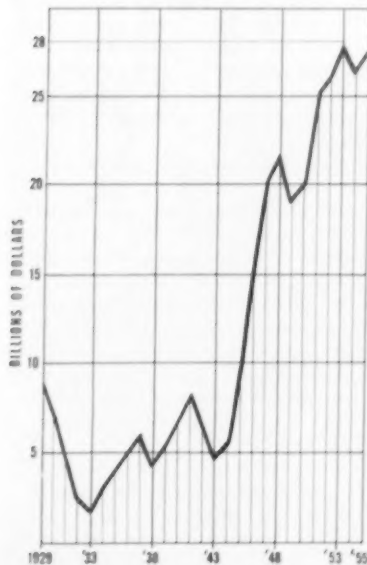


schools, hospitals, sewer and water, etc.

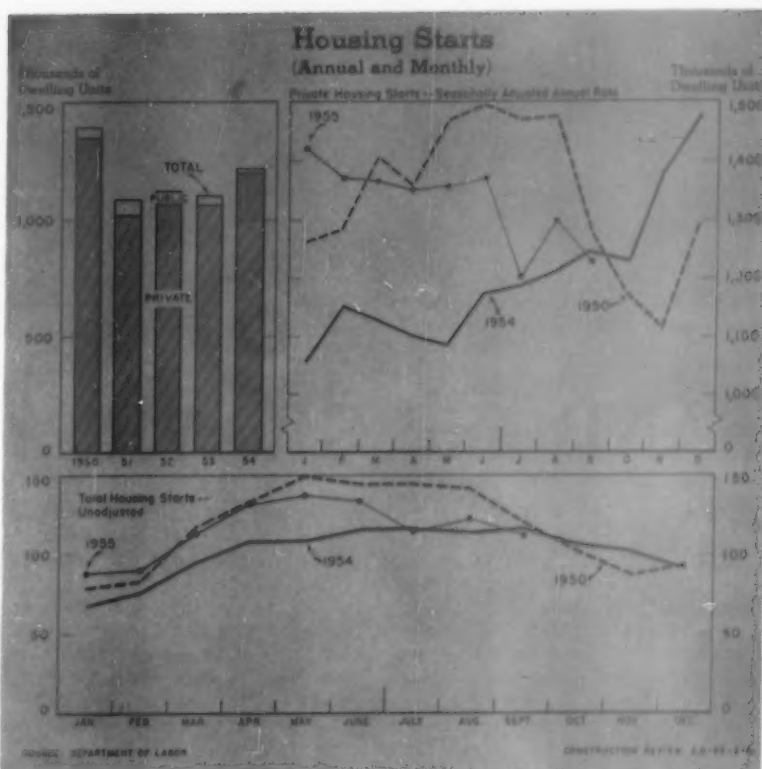
The long-range estimate for homes is 12 to 13 million units over 10 years according to F. W. Dodge Corp., to keep pace with the normal growth of the nation and taking into account the possibility of a downturn of a year or two. This in itself indicates an enormous market for materials. It is estimated that one million homes requires 29 million barrels of cement, more than 600 million concrete block and 2 billion square feet of gypsum wallboard. Dodge predicts \$600 billion to be spent for building materials and labor over a 10-yr. period including \$450 billion for new construction and \$150 billion for maintenance and repair. Other sources say that there is now a backlog of more than \$84 billion in heavy construction on the books.

Competition nevertheless is tightening. Contractor failures are on the increase and construction costs continue to rise gradually. Increased capacity and rising productivity by suppliers of building materials have prevented all but a few shortages. Building materials costs have increased 8.4 percent since mid-1954 and by 26 percent in the past six years. Rock products have not kept pace in price increases with the average rises for all building materials.

The tempo of building is emphasized by what has taken place in the gypsum industry. Its output has increased 69 percent since 1949. It is said that that industry will not experience a drop in sales unless there be a decrease in construction of 15 percent. Sales of National Gypsum Co.



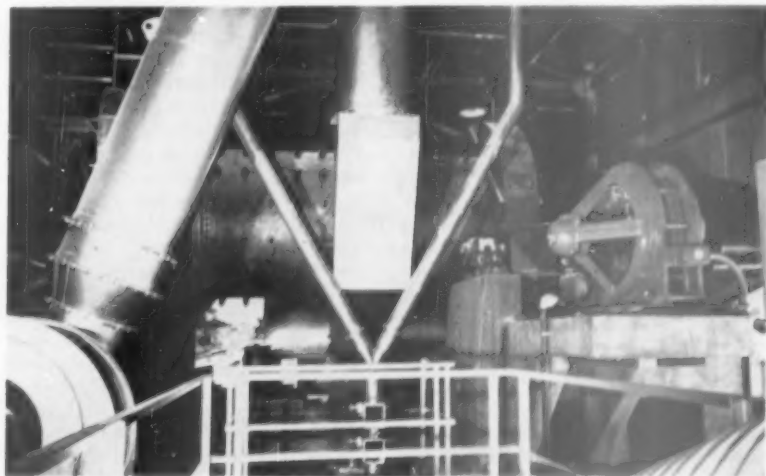
Trend in expenditures for plants and equipment from 1929 to 1955



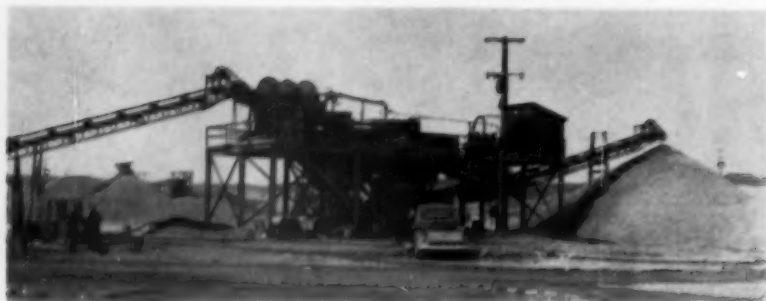
were \$126 million in 1954, are estimated at \$150 million in 1955 and expected to reach \$176 million in 1956. A \$75 million 5-yr. expansion program is now underway by National Gypsum Co. alone.

All the activity in construction will not be without its disadvantages. Machinery manufacturers have large backlogs of unfilled orders, too, which must be anticipated by those who would expand and modernize their

operations. Steel and parts are behind on deliveries now without the added burden of an expanded highway program that may come any time. With or without the anticipated highway program, the amount of construction in 1956 and the immediate future is sufficient to justify new equipment by many producers. Orders placed as early as possible would seem desirable and likely they may be filled at lower prices than six months or a year hence.



A 6 x 12-ft. rod mill operated by Dolomite Products, Inc., which dries while it grinds. An oil-fired furnace supplies hot air



Heavy media plant of Harry Pickett, Northville, Mich., which upgrades gravel by removing shale, chert, and mud balls

## SAND and GRAVEL

OUR LETTER TO THE AGGREGATES INDUSTRIES requested comments on business conditions, plant expansion, complaints against producers, zoning restrictions and the outlook for reserves of raw materials. We further requested a statement on the approximate investment per employee including current assets or working capital, and the yearly total expenditures for machinery, supplies and payroll. The returns were excellent and we consider our estimates as drawn therefrom to be representative.

Fifty-one percent of our correspondents reported that 1955 volume of business had increased over 1954. Thirty-three percent had about the same volume of sales for the two years, many of them operating to capacity both years. Sixteen percent reported reduced volume. Of the latter, the majority were in the midwest.

Range of volume increase was 10 to 50 percent with an average increase of 22 percent. Reductions in volume reported were small, the largest being 20 percent in the case of an Iowa producer. Southern California producers may show a decline for the year because of the lengthy year-end strike but the result will be a large backlog to be carried over into 1956. The area is extremely active in construction. Some producers in Los Angeles county were running well ahead in volume over 1954 when the strike broke.

Forty percent predicted that volume of business in 1956 would be higher than in 1955, 20 percent believe that volume would be less and the remaining 40 percent expect to equal 1955 volume of sales.

From these figures, it is indicated that the entire sand and gravel industry attained a total of about 500 million tons, and likely in excess of 400 million tons of commercial output, in 1955 and will exceed that figure in 1956.

The majority expressed concern for prices which they consider too low in view of higher costs for everything. Only 25 percent reported a price increase during 1955 and they were modest. With one exception the top increase was 10 percent. Seventy percent had the same prices for the two years and five percent reported price reductions because of severe competitive conditions.

Several producers reported reduced volume of business due to new competition with more favorable freight rates moving into their area. Several of the reported losses in volume were due to cement shortages slowing construction while a few said that volume would have increased considerably had there been no cement shortage. There is evidence that more contractors are seeking special discounts and some producers are pricing their materials lower in accordance with contractor bid prices. Trucking competition is responsible for lower pricing by rail-shipping plants in a few cases.

About two-thirds of those replying to our letter stated that they had made plant equipment changes, minor or major, or built new facilities during the past two years in order to keep up with demands. One-third reported operating longer hours and on double shifts rather than increase capacity as such. Many have stepped up production by tightening up operating practices and some plants have been rebuilt to gain efficiency.

Fifteen percent made no changes the past two years to increase capacity and, for the balance, the increase reported was an average of about 30 percent. Twenty percent of them doubled capacity and one company quadrupled capacity. About 25 percent have specific plans for further enlargement, others are waiting to determine the demand and the majority will continue extra-shift operation.

Twenty-three percent had specific complaints made about their operations during 1955. There is evidence that more effort is being made to create better neighbor relations even where there have yet been no complaints. There are instances where producers are voluntarily planting trees, shrubs and grass to make their operations more presentable, some are leveling depleted land next to public roads and oiling gravel roads nearby residences to allay dust. There are more and more producers who consider complaints seriously and are taking care of objections promptly.

Instances were reported where there are no complaints about existing operations but strong opposition to permitting producers to expand beyond their present boundaries. About ten percent have felt the impact of restrictive zoning which has denied access to good gravel property and a few are forced to have a permit in order to operate on properties not presently owned. Many thus far unaffected realize the growing menace to their businesses and anticipate difficulties in the years ahead.

There is evidence of plants being threatened for lack of reserves in the case of 20 percent of our correspondents. A few have suffered losses of reserves due to the confiscation of property because of state highway construction.

The average approximate investment per employee, including current assets or working capital, shows little difference according to size of operation. For our calculations, plants were classified as large, medium and small according to amount of expenditures for machinery, supplies and payroll. The average investment per employee for the small plant group was \$15,800 as compared to \$22,500 for the medium group and \$23,200 for the large plants. Average investment for all plants was \$20,600.

The extremes were \$4000 for one plant and \$100,000 for a New York State plant that is new and obviously highly mechanized with an absolute minimum in personnel. One-third of the total have an investment between \$10,000 and \$15,000 per employee and 25 percent run from \$15,000 to \$20,000. Twelve percent range from \$20,000 to \$30,000 per employee and 11 percent fall between \$5000 and \$10,000. The balance are in excess of \$30,000.

Older plants obviously have less investment per employee because some of their investment has been written off and, being less efficient as a group, have more employees per unit of production, which explains, in part, the lack of correlation according to size

of operation. Also the type of operation and its location have a bearing.

The greater expenditures for plants that must have large crushing and screening capacity and which must meet a myriad of specifications, like large plants in Ohio, for example, cost much more to build than plants of equal hourly tonnage, say in Louisiana, Mississippi or Texas. But, they require proportionately greater personnel to operate.

According to recent surveys, employment is about 25,000 for the commercial sand and gravel industry, with a production of some 400 million tons annually. Thus an investment of about \$500 million is indicated. This is about 20 percent more than the gross annual sales of the industry.

According to a recent study by the Machinery and Allied Products Institute the present capital investment to employ one worker is estimated at \$12,500, covering all types of business as a whole. This figure covers plant and equipment, land and financial resources and current assets and is for going concerns with used facilities. For a new firm or a separate expansion project the total investment might be as high as \$17,500, according to the report. Thus, the sand and gravel industry has an investment per employee well exceeding the national average for all types of industries.

Annual expenditures for machinery, supplies and payroll ranged from an average of about \$50,000 for the small plants to well over a million dollar average for the large operations, with \$160,000 for medium sized plants. A relatively few breakdowns of separate expenditures for payroll, machinery and supplies indicates that machinery and supplies totalled about 60 percent

of payroll but the figure is by no means conclusive.

Highest expenditures were in the order of 1, 2, 3, 4 and \$5 million. One-third are from a minimum of \$15,000 to \$100,000 with most of these averaging \$60,000. Forty percent spent between \$100,000 and \$500,000 with an average of about

\$200,000, and the balance spent from \$600,000 to \$5,500,000.

Due to the fact that some companies produce crushed stone and ready-mixed concrete as well, it is impossible to arrive at an industry figure for annual expenditures without exhaustive, painstaking study which time will not permit.

## CRUSHED STONE

**T**HE CRUSHED STONE INDUSTRY had a record year in 1955 as far as tonnage is concerned according to reports received from individual producers. Volume increased for 56 percent of those answering our letter and their increases ranged from one or two percent to as high as 24 percent. The average increase for these producers was about 15 percent.

Twenty-six percent had about the same volume of business as in 1954 and 17 percent had a reduction in volume.

Prices were considered to be too low in view of steadily rising costs, even where producers were successful in gaining price increases. Raises in prices were moderate and in terms of but a few percent for the 50 percent who raised their prices. The maximum was 8 or 10 percent. Twenty-one percent had the same prices in 1955 as in 1954 and 29 percent sold crushed stone at reduced prices. As a result of unsatisfactory prices, some of the producers who materially increased production ended the year with lower profits.

Competition from portable plants

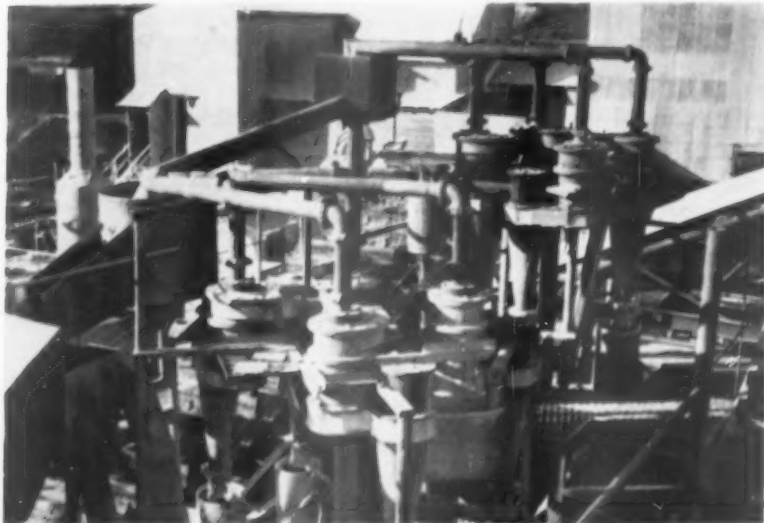
was the reason for depressed prices or inability to increase prices for a number of producers. In a midwestern state, portable plant competition cut the price structure by 10 to 12 percent. In other instances, volume increase has been the only solution to failure in gaining price increases. More aggressive merchandising has been essential in the affected areas.

It is of interest that a number of substantial producers were able to maintain 1955 output up to 1954 levels even though there were no large highway contracts in their marketing area. Normally, some of these producers have depended heavily on highway business but all manner of miscellaneous uses for crushed stone have taken up the slack. There are instances where producers say that their state highway departments are undermanned for planning and engineering, and are waiting to see how the federal program will develop.

Producers in the midwestern farming areas have been hurt, in some instances, because of the unfavorable level of farm income. This has been particularly so where all or a large portion of the production is of agricultural limestone. As one small producer expressed it, "Our business is off with the price of hogs."

Eastern producers who have supplied large tonnages of crushed stone for the New York Thruway had lower volume of business in 1955 because the project was completed. However, they no doubt had record tonnages in 1954 with which to compare. The high level of railroad freight rates is blamed by some rail shippers for the influx of more portable plant production into their normal marketing area. A year from now we undoubtedly will learn that moderate price increases came into effect in 1956 for many producers.

Fifty-three percent estimate that 1956 volume of sales will be higher than in 1955 and the balance expect that they will maintain equal tonnage. Some of the latter qualify by saying they will exceed 1955 volume if some



Two batteries of four liquid cyclones recover fine silica sand and remove slimes at Crystal Silica Co., Oceanside, Calif.



form of stepped up federal-aid highway building program be started. Others expect that such accelerated highway building will be the only solution to more serious inroads from portable plant competition.

Representative of the types of comments on business conditions were the following:

#### MEDIUM-SIZED PLANT IN IOWA:

"In spite of increased cost of materials and labor, prices are stationary to lower because of portable plants. No increase in production is in sight for the coming year."

#### KANSAS PRODUCER:

"Our agricultural business is practically prostrate with no hope for improvement until better legislation is obtained. We need improved weather conditions and a new crop as much as anything else."

"Our crushed stone business for the first three months of our fiscal year which began July 1, is better than our entire output for last year. If any agricultural business develops, we expect to have our best year insofar as gross is concerned. However, increased cost of labor, taxes and equipment will not necessarily mean our most profitable year. We are hoping for the best."

"We believe that it is possible with the right kind of a road bill, giving attention to the use of secondary roads and also the utilization of rock as a road metal, will materially help the entire crushed stone business here in Kansas."

"We are also developing, through the State Research Board, additional uses for fines including agricultural limestone in the stabilization of roads, sub-bases, etc."

#### NEW ENGLAND PRODUCER:

"Our total volume of both crushed stone and concrete will be about the same in 1955 as 1954 with a slight increase in the average prices. Next year we look for a slightly larger volume on crushed stone and a considerable increase on concrete. The average price of crushed stone will probably go up a few cents, and concrete will rise about \$1.00 per cu. yd. due mostly to the increase in the price of cement."

#### OHIO PRODUCER:

"Our 1955 volume was up 10 percent and our 1955 price up only about 1 percent. Increases in certain items were greater than this but a balance of demand reduced the overall figure to a very slight increase."

"Looking ahead to 1956, we anticipate no substantial change in volume but will find it necessary to increase prices to compensate for increased costs resulting from higher prices on supplies and equipment."

"Our 1956 labor contract has not

yet been made, and such increases as we may find it necessary or expedient to make will have an impact on our costs and to some degree on our prices."

#### MISSOURI PRODUCER:

"On January 1, 1951, we increased our prices \$.07 per ton and during the past 10 months we have found it necessary in order to meet portable plant competition, to reduce our prices approximately 10 to 21 percent. In 1954 our total volume of business was \$1,083,640 and based upon 10 months ending October 31, 1955, we estimate our total business for 1955 will be \$1,042,377."

"We have a backlog of 30,000 tons of stone to be delivered in the early part of 1956 and the prospects for a considerable amount of road work in our part of the state would indicate that the year 1956 should be somewhat better than in 1955."

#### LARGE MIDWESTERN PRODUCER:

"The outlook for 1956 is very good. It appears, however, that we will be limited on cement supply for at least another year. There have been no significant changes in distribution of markets. The use of ready-mixed concrete, however, is ever on the increase."

#### NEW YORK STATE PRODUCER:

"Our volume of business in 1955 was considerably off from the figures for 1954. This is the result of having completed the New York State Thruway in 1954 and curtailed expenditures by the state in 1955. The outlook for 1956 is very cloudy. An amendment for a bond issue for highways in the state was defeated by the people in the last election. What the program may be for next year is of concern to us at this writing."

#### GEORGIA PRODUCER:

"Business and prices in 1955 will be about the same as in 1954. Unless there is a substantial road program, the added competition from plant expansions and portable plants will cut into business."

"Railroads are not showing any co-operation in meeting truck or portable plant competition."

#### TENNESSEE PRODUCER:

"We had about the same volume in the crushed stone business this year as in 1954 and it was surprising to us. There were no large highway contracts in our area but there was a lot of small miscellaneous business which made up the tonnage."

"We see no particular change in the immediate near future concerning the distribution and production of crushed stone. Our state highway departments are under-manned insofar as planning and engineering is concerned, and I think, too, that a good many of the states are awaiting the Federal High-

way Program so that there will be no duplication of effort, and possibly also because of the thought that maybe "Uncle Sam" will do it."

Operating facilities were expanded for greater production during the past two years by 65 percent of the plants, which made changes, including the substitution of larger production units, in existing plants. Quite a few entirely new plants were built, mainly by smaller producers, which increased capacity as much as 100 to 200 percent.

Stockpiling in anticipation of peaks has been the solution for some producers where demands permitted.

Seventeen percent met the increased demands largely through putting in more operating hours or going to extra-shift production.

Generally speaking, the types of modernization and enlargement to existing operations were pointed to the elimination of bottlenecks in order that all parts of a plant operation might function more nearly to peak production. Larger sizes of machinery were substituted by many producers, and much of it included larger quarry machinery and haulage units. Pan feeders to regulate primary crusher operation and installation of equipment for increasing the capacity of smaller stone sizes to conform with specification trends are types of installations being made by larger producers. Other plant modernization has been done in order to meet more rigid specifications.

In the midwest there is evidence that more large operators of stationary plants are adding portable and semi-portable plants to augment production and to extend their geographic markets. Many of the large, well-equipped producers have increased productive capacity measurably each of the recent years through constant study of plant performance and the application of corrective measures and preventive maintenance. Increases in productive capacity over the past two years have been of the order of 15 to 25 percent for the majority.

Typical of comments on plant expansion were the following:

#### IOWA:

"No increase in capacity but in methods to meet more exacting specifications."

#### NEW YORK STATE:

"Increased demand in our local area has not increased to the point where our local plants are overtaxed to meet output demand."

"Rather than increase our capacity in the last two years, we have put on additional shifts to take care of the increased volume and feel for the immediate future we could handle demands in this area."



#### GEORGIA:

"We have added new equipment including a pan feeder, trucks and drop ball cranes. Capacity has been increased about 30 percent. We are considering making new products."

#### NEW ENGLAND:

"Last year we spent \$169,000 for new machinery and \$750,300 for supplies which includes portland cement for ready-mixed concrete. Our total payroll for 1954 was \$403,300."

"We have not increased our capacity to produce crushed stone in the last two years, but we are in the process of installing equipment to increase the percentage of finer sizes. We will, however, increase our concrete capacity about 20 percent in the next year."

#### KANSAS:

"New methods, latest machinery and innovations plus increased know-how gleaned from conventions and meetings have increased our production."

"Capacity is up about 200 percent. We have additional roadbuilding and rock excavation equipment, larger hauling and loading units, etc. Increased portable operations."

#### MIDWEST:

"Our annual expenditures for machinery are about \$1 million and for supplies they range from two to two and one-half million. Our payroll ranges from \$4,600,000 to \$5,000,000, exclusive of independent hired cartage."

"During the past few years we have made every effort to increase the efficiency of our present facilities and our production has been increased to quite an extent. It appears, however, that the limit has been reached especially so far as our large quarry is concerned and sometime in the near future we will have to give thought to a new plant."

#### OHIO:

"Modernization of plant and equipment and the addition of a second shift has enabled us to meet increased demands. There has been very little increase in the last two years in rated capacity, but about 33 percent increase in production due to improved machinery and second shift operation at one plant."

#### MISSOURI:

"This company has increased its production capacity approximately 50 percent within the last five years. The increase in capacity had been made prior to the last two years. Another increase in capacity is being considered at this time."

Complaints about plant operations, zoning regulations and/or limitations on reserves available for extension of operations have confronted about three-quarters of crushed stone producers replying to our letter.

There are a number of cases where



Dumping a semi-trailer at primary crusher in quarry. Note crane for servicing crusher

threatened producers have been successful in gaining proper zoning ordinances but not always without granting many concessions.

Where quarries are in congested areas, complaints are increasing with the years and more are to be expected in the future. Such producers, by and large, are changing operating practices where possible in order to meet the challenge; they are installing dust collectors, oiling and sprinkling dusty roads, etc. Village ordinances have placed some plants in jeopardy through limitations on reserves available for continuance of operations.

Some 24 percent of producers indicated that they were encountering complaints with respect to blasting or that they recently have been or now are confronted with lawsuits for alleged damage due to vibration from blasting.

In most of these cases, they have been reasonably successful in defense because they employ the latest in techniques in order to hold vibrations within permissible limits and use seismographic data to prove that vibrations are within safe limits. Many companies are measuring their blasts with seismographs as a steady, or periodic practice, and compiling records to prove that vibrations are within permissible limits. The services of vibration measurement experts are in growing demand and blasting practices are being changed according to their recommendations.

Typical of the comments on restrictions and blasting were the following:

#### OHIO:

"Early complaints were met by interviews with complainants and changes in operating practices based on technical advice from vibration engineers, explosive companies, dust control studies, etc."

"Current operations not yet restricted because of relatively adequate raw material reserves but attempts to ex-

pand those reserves through purchasing additional areas encounter encroachment of homes, highways, etc., backed by zoning regulations."

"Any natural resource operations conducted in populous areas must sooner or later encounter serious difficulty. Much of the best stone property in our area have been given over to residential uses. In other areas the stone does not occur adequately; hence the lack of extensive reserves poses a serious problem."

"Blasting complaints are very greatly reduced. We use wagon drills instead of well drills, sharply reduce total explosive load, use millisecond delays and the substitution of drop ball for secondary blasting. Also we use a record of every shot showing location, number of holes, quantity of explosives, direction of wind, etc. A copy of these reports is filed periodically with the Service Director of the neighboring city. Upon complaint we can produce a report showing that the explosives used were well within the permissible limits established by vibration engineers."

#### NEW ENGLAND:

"We have the usual complaints from our neighbors, but I would not say they are serious, and I think the situation has improved a great deal in the last 20 years."

"We have not had any zoning problems at our crushed stone operation because we own a large acreage. However, we are having trouble finding a permissible location for an outlying concrete plant."

#### MIDWEST:

"We have experienced considerable difficulty in the past few years, especially at one of our quarries and at our new gravel pit. The quarry is in a village and new zoning restrictions adopted several years ago have limited our reserves considerably. It took about a year to get our new gravel plant properly zoned and that was

accomplished only after we had made a lot of concessions."

#### KANSAS:

"In the beginning we had numerous complaints as the blasting operations were new in the community and the shock disturbing. However, by the use of improved blasting operations, millisecond delays and increased skill of our powder man, we have eliminated practically all complaints and we have had no difficulty in recent years."

#### TENNESSEE:

"We have had a lawsuit claiming damages from quarry blasting at one quarry. The juries in five cases (three cases tried at one time and immediately two other cases tried at one time) found for us and no damages from blasting were payable.

"We feel that the use of millisecond delays and seismographic data we had from Don Leet's company for several years before we were sued, played a very important part in winning these cases for us. As far as I know the first millisecond delay caps in the southeast were tried out in our quarry."

#### IOWA:

"In past years our neighbors have complained about our operations, mainly due to the dust nuisance. We have installed dust control equipment and during dry weather, we sprinkle the roads and plant areas. Our dust problem is now fairly well under control and we have not recently been subjected to any serious complaints.

"Up to date we have not suffered from zoning restrictions. However, looking into the future, there appears to be a possibility that sometime or another we may have this problem to face."

#### NEW YORK STATE:

"We have what we consider to be minor complaints about our operations. We attempt to handle these at the individual plants and I might say there is no trend or major complaints with which we are confronted at the moment.

"Since we operate in rural areas we at the moment have not been confronted with zoning restrictions. We do know the Association of Towns in New York State is pressing for legislation known as "The Town Law" which would give each of some 900 towns, power to regulate our industry in their own township. This is a dangerous situation.

"Presently zoning restrictions have not threatened our business due to lack of reserves of raw materials.

"Up to now we have not been threatened with lawsuits from our neighbors as a result of our blasting. We are using the millisecond delay system for detonating our shots. In addition we

have at least three of our shots measured by seismograph each year and keep reports on all shots so that the results of the unmeasured shots may be correlated with those that are measured. This system is being used throughout the state."

Investment per employee, including current assets or working capital, for the crushed stone industry averages \$13,500 for all reporting operations regardless of size. The figure averages \$11,700 for the smaller operations, \$11,300 for those of medium size and \$15,430 for large operations. Thus, there is little difference according to size of operations. Sixty percent have an investment within the range of \$12,000 to \$15,000 per employee.

According to estimates on employment in the industry, there are about 35,000 employees involved for a total commercial production slightly more than 300 million tons annually. It

would appear from these estimates that current investment is some \$472 million or about one and one-half times the yearly value of the industry's output.

Expenditures for machinery, supplies and payrolls have too many variables involved for any projection for the industry. They range from as low as \$50,000 a year for small operations to 4, 5, 6 and even \$8 million for very large producers with several plants.

Eighteen percent fall in the range of \$50,000 - \$100,000, 26 percent from \$100,000 - \$500,000, and 22 percent from \$500,000 - \$1 million. Among large operations we estimate that a sample of companies with 15 million tons annual production spend more than \$11 million for machinery, supplies and payroll. However, this projection means little since abnormal expenditures for plant building in any year contribute to inaccurate figures.

## Lime—Lightweight Aggregates

According to our summary of comments, the lime industry had a good year in 1955 with some 50 percent reporting increased volume of business, averaging about 20 percent. About 25 percent had a volume of business equal to 1954 and the balance reported reduced volume. The largest reduction was 21 percent. Most lime producers had price increases of about 5-8 percent. A little more than half reporting, indicated that volume of business would show a further increase in 1956. One producer pointed out that if the lime-soil stabilization program being pushed by the National Lime Association catches on, that a wave of expansion may become necessary. A western producer located in a large mining center has had to contend with abnormal labor demands because workers have become so experienced through negotiations with large mining firms. He also is at a disadvantage in freight rates that permit lime plants more than a thousand miles distant to compete in his area.

About three-fourths of the companies had enlarged plant capacity over the past two years and more than half indicate that further expansion is contemplated in 1956. Several new rotary kilns are to be installed which will materially increase capacity. Increased storage for raw materials and finished product are contemplated by several companies and the lime industry, generally, will increase capacity through modernization pointed at improved efficiency.

About one-fourth have had complaints for dust and other reasons,

among them alleged damages from blasting vibrations. The industry apparently has an investment, including current assets of working capital, averaging \$14,000 per employee. Nearly all fall in the range of \$10,000 to \$15,000.

#### Miscellaneous

Scattered returns from other rock products industries indicate that 1955 volume, generally, exceeded 1954 and that further gains will be made in 1956. These returns were from mineral wool producers, slag producers, industrial sand, perlite, lightweight aggregate and pumice producers. Most of them indicated substantial gains in 1955, notably producers of lightweight aggregates. A number of lightweight aggregate (expanded shale) plants have been enlarged and there is evidence of entirely new plants to be built. New rotary kilns were installed in Cleveland, Ohio, and in Louisville, Ky. Two new plants are being built in Canada, in addition to a new one that had started up this past year in Calgary.

Investment per employee is about \$35,000 for a new, modern expanded shale plant, and \$30,000 for a pumice plant according to our available figures. For mineral wool, perlite and industrial sand, the investment per employee averages between \$10,000 and \$15,000.

SAMPSON'S SAND AND GRAVEL CO., owned by John and Harlan Sampson, has opened a sand and gravel plant 12 miles south of Moses Lake, Wash.



Overall view of limestone crushing and screening plant which produces several sizes of material

## FLEXIBLE Stone Plant

• Fond du Lac Stone Co. converts dimension stone rejects in-  
to five different sizes in new plant producing up to 130 t.p.h.

FOR SEVERAL YEARS, Fond du Lac Stone Co., located four miles south of Fond du Lac, Wis., has been crushing waste and reject stone, which had accumulated in dimension or building stone operations, to produce road stone, concrete aggregate and agricultural limestone.

Although the quarry itself had not been anywhere near depleted, the plant had become old, obsolete and with a capacity no longer great enough or sufficiently flexible to keep pace with increasing demands. Thorsten Johnson, owner of the quarry, decided that along with greater production, he needed a plant flexible enough to pro-

duce at least four kinds of products. He had markets for roadstone used on secondary city streets and county and township roads; for aggregate needed by concrete mix producers; for asphalt stone; and for agricultural limestone.

After approximately four years of planning, investigating and seeking in- to the merits of modern crushing equipment, a new plant designed and built by Pioneer Engineering Works, Inc., Minneapolis, Minn., was purchased.

Units of the new plant comprise a Pioneer No. 173 primary plant, consisting of a 42-in. x 14-ft. apron feed-

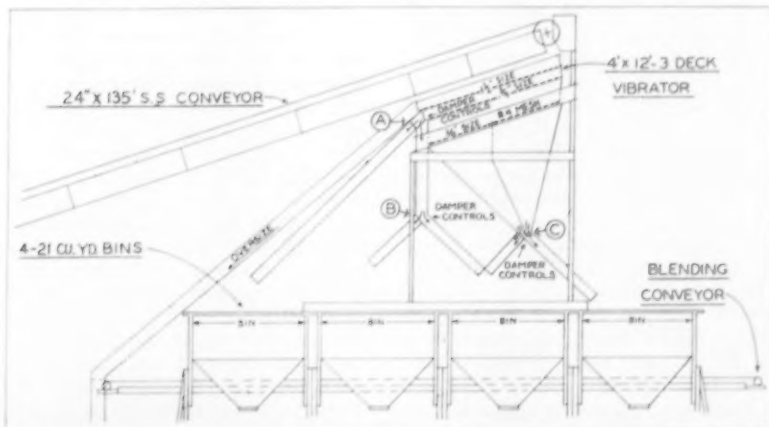
er and a 3042 jaw crusher. The feeder produced a large enough dumping pocket 12½ ft. wide, for the trucker to dump his entire load and to be back on his way to the new 1-cu. yd. Lorain shovel with a minimum of lost time. The jaw crusher was large enough to take the big slabs without secondary drilling and shooting in the quarry; and special anti-slab jaws crushed the material down to a minus 3-in. size without allowing thin slabs to slip through the jaw setting.

A 30-in. delivery belt conveyor, 67-ft. centers, with a magnetic head pulley, designed to reject tramp iron or other non-crushable material before it could harm equipment in the remainder of the circuit, was installed.

A 3- x 8-ft. two-deck scalping screen on hand was utilized as the next unit in the circuit. This screen scalps out crushed stone up to ¾-in. together with a certain amount of dirt and crusher dust, thus accomplishing a dual purpose of producing a road-stone by-product and of up-grading the stone which goes on for further processing. The ¾-in. road stone is stockpiled by a 24-in. side delivery conveyor, 45-ft. centers. Before the plant was more than a couple of months in production, an order for 40,000 cu. yd. of this product was sold and ultimately delivered.

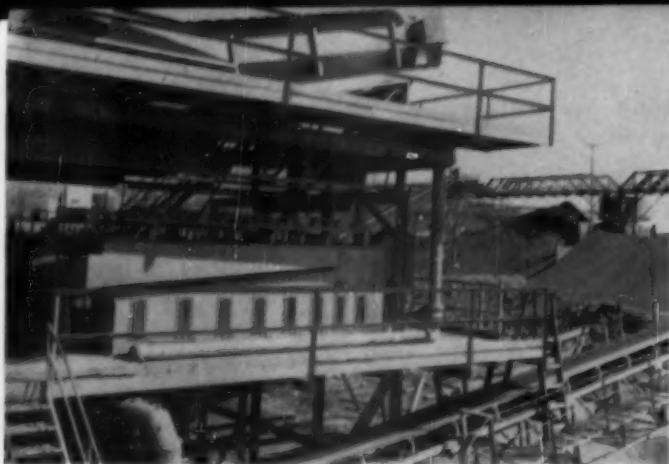
A new 3018 Pioneer triple-roll crusher serves as intermediate and secondary crusher, all in one unit. This unit crushes the oversize product from the 3042 jaw as well as oversize

(Continued on page 118)



**Schematic arrangement** of sizing screens and damper arrangements for multiple sizing operations. The five sizes are minus No. 4, minus ¾-in. plus No. 4, minus ¾-in. plus ¾-in., minus 1½-in. plus ¾-in., and plus 1½-in. oversize. By turning damper controls A, B and C, such other product sizes as minus ¾-in., minus ¾-in., and minus 1½-in. may be alternately produced





**Sand preparation equipment** used by Atkinson-Ostrander Co., in preparing aggregates for Dalles Dam. Sand spirals are shown above and sand sifters are below



**Dredge** operated by Walt Keeler Co., Wichita, Kan., supplies aggregates for extensive ready-mixed concrete operation

## TECHNICAL TRENDS In the

### READ ABOUT

... the latest developments in beneficiation, fine grinding and crushing, automatic sampling, drills and shovels, and lightweight aggregates

By WALTER B. LENHART

**L**OOKING BACK OVER EVENTS in the aggregate and industrial minerals and related fields for the past year one cannot help but be impressed with the fact that here is an "industry." It is not a trade where one buys something and re-sells it, but a huge basic industry; one that takes material from the surface of the earth and transposes it, in many instances, by complex and involved technological processes, into something valuable and useful to man. Every type of construction uses materials produced by the rock products industry and tonnage-wise, the volume is growing each year. The tonnage has now reached a yearly figure greater than coal and metallic minerals combined.

In these few pages we will attempt to review technological developments and trends. Business conditions in the rock products industries in the areas visited were excellent. Some sections had more than their share of labor troubles in the form of strikes. New plants were much in evidence.

There is the general feeling that a highway program similar to that proposed by President Eisenhower will become a reality probably at the next session of congress. This program and its effect on the rock products industry will be profound and long lasting. One prominent cement manufacturer and industrialist said that if the program went through the cement industry would have to expand two and one-half times. Obviously, aggregate, ready-

mixed concrete and black-top producers will have to go along with this expansion.

**Shortages of portland cement and gypsum and its products are being corrected nationwide.** One of the most astounding growths has been in the gypsum field.

There has been a falling off in western federal construction projects, notably in the irrigation, major flood control category that normally require dams. This situation left many of the larger contracting companies with a lot of equipment suitable for rock beneficiation. So the next step was for several to go into the production of commercial aggregates. A high calcium limestone operation in eastern Oregon, a quarry in California and two gravel operations in that same state might be attributed to this situation.

**However, even if federal dam construction has lagged, there is no falling off of proposals for future work along these lines.** One project in California often referred to as the "Feather River Project" is receiving a lot of attention. The key structure of the project will be the Oroville dam on the Feather River. This is in the east central part of the state and north of Sacramento. The proposed dam will dwarf Grand Coulee and will involve some 14,000,000 cu. yd. of concrete and will be 720 ft. high. It will develop 440,000 kilowatt. By a series of canals the water will be led southward and eventually to the Mexican border.

The rock products industry is inclined to put too much emphasis on defects in its products. Most aggregates are sound, but the drums of publicity have been sounding so intensively, for example, on the subject of "reactivity" that many are led to believe that it is a wide, universal problem. In one case it was determined that the cause of concrete failure was "mud balls" and not reactivity of the aggregate itself as the concrete technologist assumed. "Thermal incompatibility" also is a term which has been applied to certain aggregates without justification.

**Publicity covering new developments in the rock products industry falls far short of that which is given the so-called metal mining industry.** When a new metal mill and mine producing 500 tons per day goes into operation, a welter of publicity is released, but if a silica producer put in a flotation plant treating 80 t.p.h. very little is heard about it. Eight gypsum plants are now under construction or went into operation west of the Mississippi River. One gypsum company alone has announced plans to spend \$75,000,000 for construction spread over several years. An even more impressive story could be told about cement industry expansion plans, but metal mining and uranium projects get the publicity.

However, the rock products producer does owe a debt of gratitude, in a measure, to the metal miner, for he





Folsom Dam which is nearing completion



Pine Flat Dam now in full service

## Industry During the Past Year

has pioneered many of the tools used by the industry. Many crushers, screens and other items came from that field, and metal mining continues to spark technological advances in the rock products field.

### Beneficiation Processes

One outstanding example is the application of the Heavy-Media process to the rock products field. There are now in the United States and Canada some eight heavy-media plants processing gravel. In California granite is being separated from dolomitic limestone. In Iowa, coal, shales and lighter rock along with some river debris are being separated from gravel. In Minnesota light and porous stone is being separated from hard gravel, and it is said that the light material finds a ready market at premium prices for it compacts on use to such a high degree that it makes excellent secondary and country roads. Michigan has several heavy-media plants in operation, and developments there indicate that a trend may be set towards tighter specifications because of H.M.S. This could mean that most of the producers that have trouble with shales, coal, water-logged wood chips, roots, may have to interest themselves in some type of light-heavy separation processing. The Ohio river has had a H.M.S. floating plant for several years, and conditions on this river are getting no better. Dredging of the bars below water lines has been going on for decades. In many instances holes are dug and seasonal floods come along and fill the holes with river debris, practically spoiling the deposit. One producer had at one time moved upstream some 90 miles from his main

sales outlet. The destructive depletion of a deposit in such a river as the Ohio — which is a very important source of aggregates — means the producer has to go back to contaminated deposits and do what he can. Heavy-media separation is one answer to this problem.

Jigs are being used to separate light materials from the heavy aggregates. According to reports, they are being used successfully to remove coal from gravel in Illinois and in West Virginia. The "Galloway" separator developed in Iowa has been perfected to a high degree by one operator. This is a wet separator and is usually a dredge pump shell mounted horizontally and in such a manner that through centrifugal action the gravel is at the outer areas of the shell with the lighter particles in the center, providing a separation of products. Several producers, notably one in Colorado, have had good success removing wood chips and roots with a screw-type dewaterer into which the sized gravel is sent by a steep chute. Turbulence near the toe of the settling area is sufficient to lift and float out the roots and the dewatering screw then returns the gravel to the system. It is a simple and effective way of handling the problem although it seems that several units must be used, one for each size of gravel processed.

The problem of clay balls in aggregate is receiving a lot of attention and heavy-media could be one answer to this problem. An Indiana operation is using a new type of scrubber that is said to be doing an outstanding job. Rotary scrubbers, hand-picking and similar expedients seem to be the main stay of those producers with clay ball

inclusions in the gravel but in many instances there is much room for improvement. Depletion of deposits is making this problem daily more acute and the time is not far when a producer will have to avail himself of every technological process so he can treat any and all types of material. The day of selecting a deposit because it yields proper materials, properly graded, is on the decline.

The problem of getting a clean sand from clay-coated raw material has been solved in several instances by the use of the so-called attrition machines. In this unit, or series of units, thick sand pulps are used and the rubbing of grain against grain cleans the particle so that the clay can later be rinsed off. Several aggregate producers in the West are using the system, and most silica (glass sand) producers have units installed or are testing them. This writer has held that coal, wood chips and root fragments in the finer sizes of sand can be removed by the oil flotation process. In many instances the fine particles of organic matter can be rinsed from the coarser sands — those in the minus ¼-in. to 30-mesh range. But in the minus 30-mesh range the gravel-organic particles seem to have an attraction for each other and do not wash out easily. No one in the United States has had the courage to pioneer this field by adopting oil or froth flotation to the processing of sand for concrete use because of the reluctance to pioneer a strange-appearing process. If the fine fraction is the only fraction processed, the cost, when spread over the total tonnage of sand produced, can be within reason. The oil flotation process here would be an adaptation of that

used in the metal and industrial minerals field.

### Better Gradation

Better gradation in sand is the goal of many producers. Concrete technologists and aggregate producers have expressed the view that gradation in the coarse sizes was not too important, but in the finer sizes more attention should be paid to the possibilities. Better workability, less bleeding, more durable concrete — these are a few of the advantages of better sand gradation. In three very recent instances sand was up-graded by removing a coarse fraction that was in excess, grinding it in a suitable unit, and returning the fines to the sand output. Concrete strengths were increased with the fines from the grinding mills added, and one producer of ready-mixed concrete was reported to have saved around \$150 per day by being able to cut the cement and still get the desired strengths. This company installed its own rod mill, a small one. However, if anyone contemplates doing any fine grinding, using a rod or ball mill or some new types of fine crushers that are available, grinding tests should first be made by experienced laboratory technicians. From grinding tests made by able men, one can then select the best type of unit to use. There is a vast difference between different types of grinding units although the differences may not appear as such to the experienced eye. This traveler has seen grinding installations, costing in the hundreds of thousands of dollars, that were practically a waste of time and effort, but if the right tool had been used, the results would have been better and at a fraction of the original cost. Machinery companies who manufacture and sell grinding equipment usually can do this type of work.

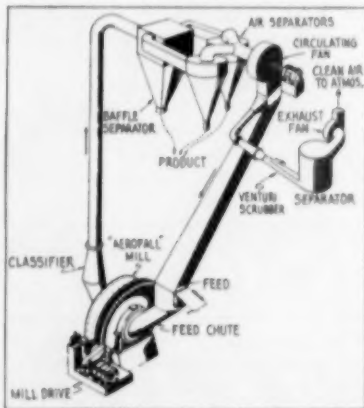
Very often a sand deposit will have the necessary fines but due to the type of equipment used, the fines are lost. By fines is meant the minus 100 and minus 200-mesh sizes. The minus 325 and finer sizes are equally important for good gradation, for gradation in sand extends clear down the line to zero. Several years ago concrete engineers talked about 1500-mesh sand. One thing that has focused attention on this subject is the continued use by the State of California of the "Sand Equivalent Test." To meet this test, washing is almost a must. Yet, for asphaltic work extreme fines are wanted so the washing plant has to meet the challenge by recovering these fines. The liquid cyclone is playing an increasingly more important part in this type of work. A two-stage liquid cyclone developed in the West is finding quite wide acceptance for this pur-

pose. One new silica processing plant in central California has a considerable number of these types of units in service separating a glass sand from a clay. A glass manufacturer gets the sand, and a clay brick and tile producer gets the clay. However, liquid cyclones of the single-stage type are used quite extensively and successfully for similar work. It appears to be coming standard practice to pick up the overflow from sand dewatering units, pump all or a part of that overflow to a liquid cyclone and then continuously blend back the recovered fines into current sand production. One silica sand producer used banks of liquid cyclones of the two-stage type as attrition units, for in the centrifugal action within the cones, high velocities of the pulp in short radii helped the scouring action of the sand grains sufficiently to meet the needs.

Separation of sand fractions into many sizes and then recombining continuously is a trend in the newer western plants. The so-called sand sizers are the backbone of this system and there are at least three different machinery companies making sand sizers that will separate six or eight (although theoretically more sizes are possible). If a size is in excess it can be sent to waste, or sent to a grinding unit and from it more fines produced which are sent back to the sand sizer for final grading. The sand sizers observed have all needed, or used, dewatering equipment to prepare the finished sand. In one instance, masons sand, concrete sand, and traction sand were all being produced continuously (and all three at the same time) by adaptations of this technique.

### Fine Crushing

Three new installations of a gyradisc crusher were in use in the West. One was preparing a so-called rock dust that was used for fines in a road



Continuous grinding mill with air current removing ground material. Cascading rock in mill does the grinding although steel balls can be added, if desired

base material. The other two were using them to manufacture sand (see *ROCK PRODUCTS*, December, 1955, p. 108.). All were using gravel as the feed and the material was usually in the minus ¾-in. range. The crushers appear to make an angular particle at high tonnage rates and with low power input. Material that tends to pancake does not appear to work so good in this unit nor does gravel with a high water content. Where the rock dust was being prepared, the crusher ran in open circuit using ground-stored and somewhat dried (by nature) materials. Another successful installation used heated (electrically) screens that received a dewatered feed and the throughs from the gyradisc. The plus from the heated screen went back to the crusher. By operating in this manner the wetter portion of the material (fines) went through the heated screens and was taken out so that the resulting material going to the crusher was in the 2.0 percent water range. It appears that if the water content of the feed gets above 3.5 percent one can expect a reduction in capacity. Two of the installations used vertical screens (a pair to each crusher) to first dewater before proceeding as above outlined. The "V" screen is small and compact and is a self-contained unit. Move the screen into place, install a feed and an off-bearing system, connect to the power line and one is in business. The vertical screen is about 6 ft. high and 3 ft. in diameter, and gyrates as well as spins so that wet gravel is thrown against the side of the unit by centrifugal force, yet operation is such that the gravel grains work progressively downward. They are efficient pre-dryers and screening units combined. Linner wear on the new type fine crusher in one instance was 1.25 cents per ton with almost 100,000 tons having been processed. However, grinding mills of the rod and ball type have the advantage of more control over the character of the product from the mill, and this can be the difference between success and failure.

In the field of fine grinding of dry materials the use of a nickle-steel grinding ball resulted in remarkably low loss of grinding media. The nickle-steel balls were used in mills of relatively small diameter. Their use in large diameter mills and/or wet grinding units, to this writer's knowledge, has not been attempted and, if they are, caution should be practiced for this type of steel ball is a relatively costly item compared to conventional steel and in large or wet mills an entirely different grinding loss could be the result. The metal in a nickle-steel ball is magnetic. One company grinding wet in large diameter ball mills



Stockpiling conveyors and screening plant, Presque Isle Corp., Presque Isle, Mich.

desired an iron-free product and for some time had used other than steel balls in the mill. Later, steel balls were adopted and the attrited iron removed by a drum-type magnet. The performance was said to be spotty so a "flocculating" magnetic coil was installed ahead of the first magnet. This type of coil is used in the Heavy-Media Separation process and it flocculates the magnetic particles. This type of coil works on the same physical principle as rubbing the blade of a pocket knife over a magnet to make the blade a magnet. The flocculating coil, similarly, makes little magnets out of the iron grains that cling together in appreciably large groups and are more readily removed by the drum-type magnet. Here is a clew for some silica producer to follow so as to get a lower iron content in his ground silica.

A grinding mill that is receiving added attention this year is the Aero-fall mill. This is a large diameter, dry-operated mill, using in essence the principle of the old Hadsel mill. It is a continuous grinding unit with air removing the ground material; and it eliminates the need for secondary crusher, primary and secondary tube, rod, or ball mills. The cascading rock in the mill does the grinding although steel balls can be added, if desired. They can tolerate up to 4 percent moisture, it is claimed. The mills are in use to grind quartz, sandstones, limestone, gypsum and asbestos ores, and give cost results that could well be studied by all those interested in fine grinding. The largest diameter mills are 17 ft., but are usually 12 ft., 9 ft., 7½ ft., and 5 ft. Direct operating costs per ton for labor, power and maintenance range from a low of \$0.094 to a high of \$0.226, and the latter was on a hard, tough quartz material.

### Automatic Sampling

There is a need in the rock products industries for a better understanding of the advantages of automatic sampling devices. Their operation is based on sound engineering principles and are widely used in metal ore sampling plants, particularly where ores are purchased outright from their metal content. The samplers are compact, simple to operate, are automatic, some are dust-proof and cost a very nominal amount. They can often be installed in bins and as the bin is being filled a "cut" is taken from the falling stream. Some work on the principle of "all of the stream part of the time" and others "part of the stream all of the time." Producers who have had cars rejected at points of use and are out-of-pocket for freight, etc., might feel much happier if they knew that the sample used for judging his material had been accurately taken by scientific methods and not just a grab sample by some inexperienced inspector. Automatic samplers are made in Denver and Salt Lake City and several have found use in the rock products plants, notably in sampling in portland cement plants.

Several new dredges went into operation in the West. At Fresno a 10-in. suction dredge got on the production line and this is the first fully engineered dredge of its type to go into operation west of Denver. There have been some smaller units that in essence were just a pump on a raft. In Denver a second floating dredge went into operation, with a third now under construction and a fourth a possibility. All these dredges are owned by one company. The two dredges now in operation use a dragline as the digging unit that is land-based. It delivers to the dredge hopper and all sized material is carried to the shoreline by belt con-

veyors. One dredge recovers enough gold to pay power costs.

Rock dust is being prepared by several California operators using gravel and/or sand as the raw material, and economical grinding is a field being thoroughly explored. These are in addition to one operation previously mentioned. Older plants as well as the newer units are equipped to keep uncrushed and washed gravel separate from the crushed (usually unwashed) with facilities for blending all types of material.

One company set up a sand and gravel plant of its own to work out the bugs of a new type of roll crusher that it intended to manufacture. The business of selling sand and gravel was so prosperous that the machinery builder decided to confine activities to selling more gravel. A second plant was built with a third in prospect.

Heated screens are becoming more general, and a circular rotary-type screen or sifter is finding a considerable use, particularly in the industrial sand plants where close gradations in the 10 through 50-mesh ranges are desired.

### Drills—Shovels

Cement quarries are using rubber-mounted drills for secondary drilling. Another company installed a heavy-duty rotary rig that drills holes in the 12-in. diameter range. According to reports, a rotary-percussion drill is being used in Europe that may revolutionize drilling. The drill is a combination of the advantages of two old and accepted methods of drilling. Post-war needs in Europe for lower mining costs led to the development of this machine. Ruggedly-built rippers attached to tractors are finding extended use in quarries, notably for loosening overburden.

Shovels and draglines continue to





**Uranium extraction plant** of International Minerals & Chemical Corp., Bonnie, Fla. Up to 0.4-lb. of uranium is obtained from one ton of phosphate raw material

be made in larger and larger sizes. One machine intended for coal stripping is now under way that is 50 percent larger than any in existence and will move 100 tons every 50 sec. A new nickle-steel alloy, "T-1," is currently being used for shovel dippers that has less weight for equivalent strength. In one instance, a 35-cu. yd. bucket was replaced with a 45-cu. yd. unit, and after moving 30,000,000 tons of rock was said to be still going strong. Nickle-steel alloys for drop balls are also being used to advantage in a western cement quarry.

Production of black-top or asphaltic paving materials by aggregate producers continues to be a trend. This year, in the West, one large producer purchased three black-top plants all at one time.

#### **Ready-Mixed Concrete**

In the ready-mixed concrete field, probably one of the most outstanding and important developments has been in the use of portable ready-mixed plants. There are several possible definitions of a portable plant. One is a type of plant made up in sections not over 8 ft. wide so it can be unbolted and hauled on most public highways. This type has all the units of a larger permanent plant.

This development appears to have had its birth in the areas west of the Mississippi River. The potentialities have led at least four companies to manufacture portable batching plants. One of the first was in Denver. This consisted of a steel weighing hopper that rested on the ground. A short inclined belt conveyor took the material in the hopper and dumped it into a mixer truck. At the outset bagged cement was used. A dirt ramp served the weighing hopper and a front-end loader delivered the different aggregates to the weighing hopper as needed. It was a low first-cost plant, and soon the smaller towns in Wyoming, Utah, Nebraska and the Dakotas had

portable batching plants. Denver could be used as an illustration of what happened. The little towns surrounding Denver got the fever and the plants moved closer and closer to the city so that established producers got into the act on the theory "If you can't lick 'em; join 'em."

A Salt Lake City ready-mixed concrete producer developed a second type of portable plant that is being accepted in several places. It is a rubber-mounted weighing hopper that rests flat at ground elevations. Front-end loaders fill the hopper, after which it rises to a sufficient elevation so that the load of dry concrete can flow into the mixer truck. It is a rugged piece of equipment, and in one instance observed bulk cement was being delivered to this batcher from a portable cement silo.

Near Sacramento, a third type of portable plant is under development. It is a small, compact, rubber-mounted weighing hopper with the dry material dumped to the mixer truck by an inclined elevator. This same manufacturer also was developing a rubber-mounted portable portland cement silo to go with the batcher. It included a small truck hopper over a horizontal screw conveyor that delivered to a vertical screw conveyor operated in a close-fitting steel pipe. The portable silo unloaded to a second vertical screw serving a weighing hopper mounted on the side of the silo.

A fourth type of portable plant that is somewhat more elaborate and with higher production possibilities has been developed in Oakland, Calif. The bins and weighing hopper of this unit are on one rubber tire-mounted section. Truck hopper and elevator for the portland cement are bolted on the main structure later and an off-bearing belt conveyor is also a separate item. This plant takes a few days to assemble and is essentially a permanent plant that can be easily moved. Aggregates handling to bins is usually

done with a clamshell. Several of these units are in use by ready-mixed concrete operators that have plants of the permanent type.

Last but not least, portability of batching equipment has been extended into the railroad field, for we observed a complete weigh-batching plant mounted on flat cars. A clamshell rig delivered aggregates to bins mounted on one flat car. Under the bin was a conveyor delivering to the scoop serving the batcher. Bagged cement was being used. A small inclined skip hoist elevated the concrete to points for eventual use. In the eastern sections of the United States, where railroads play an important part in the delivery of aggregates, this type of portable plant could be studied with interest.

The development and use of these portable plants brings up questions: Where does the line of demarcation between a stationary plant and a portable one begin? Are these to be competitive with established producers or become an adjunct to their business? How big must a job be to afford to move a portable plant to it? Are these portable plants to really be small plants spotted around the periphery of a market; not essentially portable but mounted permanently — in other words, just small plants in small towns with the plant owned by established producers.

One producer in the West had an established plant on the eastern edge of a large city. His sand and gravel operation was also on the eastern edge of the same city. He established a portable plant of the larger type near the western edge of the city and mounted it permanently. Trucks now haul sand and gravel in 15-ton payloads to the plant at times when traffic is easy. One or more mixer trucks run out from the parent plant as needed. By this expedient the city streets are not cluttered with gravel or ready-mixed concrete trucks during peak hours. This is not only good economics but makes for good public relations.

One manufacturer in this field was developing a front-end loader that also would be a weighing device so that aggregates could be weighed into the main hopper thereby possibly speeding up the overall operation.

The portable plant is going to be both a thorn-in-the-side to some and an asset to more. It's here to stay and has advantages that cannot be ignored.

#### **Concrete Products**

A concrete pipe manufacturer in the West has developed a "no-joint" pipe machine that in essence lays a continuous length of concrete pipe. The pipe is cast continuously in the ditch using ready-mixed concrete.



Lengths of pipe without joints up to 1½ miles in length have been cast with this machine and for underground irrigation work is finding considerable usage. Its proponents claim that when the pipe is cast in place the green concrete grips the ground surface, thereby helping to reduce expansion and contraction.

In the prestressed concrete field, one new producer found it to advantage to send concrete beams to Belgium for testing. The freight on the beam to Europe plus the testing fee was less than what laboratories in the United States wanted. Better understanding from greater experience was also a factor in selecting the more distant laboratory.

A concrete panel machine made at Bishop, Calif., is being used in at least two plants for operation in conjunction with its regular concrete masonry business. It makes a cored panel up to 10 ft. long. The machine is said to be one answer to "tilt-up" competition. Precast panel construction and concrete masonry structures at the Las Vegas, Nev., bomb tests were outstanding in their ability to withstand bomb bursts. Several types of premixed, packaged, dry concrete mixes are being exploited in the West. This type of material is for the small occasional user of concrete and the tonnage moved by all these types of producers is surprisingly large.

#### Industrial Sand

Of interest to the industrial sand group are sands used in the so-called



A "no-joint" concrete pipe machine in action



Ready-mixed concrete supplies "no-joint" concrete pipe machine

"Hydrafrac" process. Under this process, old oil wells that become practically non-productive are revived. A special sand is mixed with a jelly and pumped into the old well under pressure up to 10,000 p.s.i. This material penetrates the oil strata and props them up so that oil again flows to the well. The jelly goes with the oil, leaving the grains of sand as propping agents. The oil industry requires a spherical-shaped grain. Describing the method of determining the sphericity of a grain of sand we quote from a letter from J. R. Thoenen, Chief, Mineral Industry Division, Region VII, Knoxville, Tenn:

"With further reference to your letter of June 18, one of our staff has received the following from Dr. Richard Mungen of Stanolind Oil and Gas Co.:

1. Sphericity — Two factors have been used to determine or define the roundness of particles. Krumbein and Sloss in their book "Stratigraphy and Sedimentation" define sphericity or the relation of the particle intercepts to each other as follows:

$$\text{Sphericity} = \frac{\sqrt[3]{\text{Volume of particle}}}{\text{Volume of the circumscribing sphere}}$$

A more practical method is the visual comparison of sand grains (usually 100 grains) with a chart and assigning to each grain a roundness factor, the average roundness being the factor assigned to the sand sample in question. Using this method of defining roundness it appears that a factor of at least .4 is required for a satisfactory propping agent. The chart may be found in the book "Stratigraphy and Sedimentation" by Krumbein and Sloss."

Specifications relating to the strength of grain are high and from the same letter we quote requirements.

"Strength specification for hydraulic fracturing propping agents is as follows: Minimum — Must be capable of supporting 2500 p.s.i. in concentrations of .394 gr. per sq. in. with a maximum reduction of 50 percent in fracture width (fracture width to be determined by placing sand between steel plates (cold roll mild steel SAE 10-20) and applying 2500 p.s.i. load)."

Most of the sand used is in the minus 20, plus 40-mesh range. They also use a 30-50 and a 10-20 size, but the former represents about 90 percent of the total. Limonite-coated grains are taboo as it is said this iron-bearing mineral reacts adversely with the jelly used. Color is not a factor although the field users think that whiteness implies purity. The amount of over or undersize in any group has to be kept extremely low. On the 20-40 type, they would like 0.0 passing the 50-mesh and as little as possible passing the 40-mesh. Cost to the oil industry does not appear to be important if they can get the grade wanted. To date shipments into the middle-south oil states have been from New Jersey, Illinois, Michigan, and Minnesota with possibilities of some from Montana and Arizona. Some is purchased through dealers, and by the time the oil producer gets the sand it costs in the \$30 per ton range. One company, according to reports, was using up to 200 carloads per month. The Hydrafrac process seems to center in the south-central states and has not spread materially to other oil-producing areas. Sacked material is the rule. It is something for all producers to keep in mind.

#### Gypsum Trends

The gypsum industry is in strong hands. There are ten companies in the

(Continued on page 105)



Overall view of plant. Tall structure behind stack is 130-ft. high preheater building. Clinker storage is on extreme left

## OPERATE SUSPENSION PREHEATER With Rotary Kiln In Waste

**R**EBUILDING OF THE CATSKILL PLANT of Alpha Portland Cement Co. at Cementon, N. Y., in 1954-1955, was accomplished at a cost exceeding \$4 million. The program increased clinker capacity by about one-third and comprised modernization and enlargement in all production departments with the exception of cement storage and packing.

This is one of the older portland cement plants in the industry, having been built in 1900 by the Catskill Cement Co. It was purchased by Alpha in 1909 and, over the years, had undergone a number of improvements to keep reasonably abreast of trends in manufacture. However, it remained for the recently completed program of rebuilding to bring the plant to a high state of efficiency.

The plant is on the west bank of the Hudson River, 110 miles north of New York City. It is a dry process operation. In the early days, producer gas was the source of power. Waste heat boilers were installed in 1916

and the plant continued to be self-sufficient in power for a number of years.

In recent years as electrical requirements increased, a considerable part of needed power has had to be purchased. This was a factor in the recent rebuilding program as part of the goal for overall economics.

### Scope of Program

The plant had three rotary kilns before the 1954-1955 program started, exhausting exit gases through a common flue to supply three waste heat boilers. They were 9- x 120-ft. rotary

kilns with 10-ft. diameter enlarged burning zones. Each was direct-fired by pulverized coal from unit mills and discharged clinker over air-quenching grate-type clinker coolers. No changes were made involving kilns Nos. 1 and 2 but No. 3 kiln was obsolete and its replacement by a 10- x 120-ft. rotary kiln with Humboldt suspension preheater was a major part of the recent reconstruction program. This kiln is consistently producing 1800 bbl. per day or more of standard clinker as compared to less than 1000 bbl. per day from the old No. 3 kiln of equal length, and at substantial savings in



Belt conveyor system as seen from cement plant. Note how it follows ground contour



Photo—Colund Aerial Surveys

**This view of plant** shows terminus of stone conveyor at new storage area. Cement silos are to the right. Tall preheater structure is alongside stack.

• Alpha Portland Cement Co. also built new crushing-screening plant and enlarged raw mill and finish mill capacity in rebuilding Catskill plant

By BROR NORDBERG

## Heat Boiler Plant

fuel. Kilns Nos. 1 and 2 each produce about 1200 bbl. of clinker per day.

This is the first installation in this country where a new rotary kiln was engineered and built to specified size and design for operation in connection with a suspension preheater as a unit. It is the first installation of a suspension preheater anywhere where excess kiln gases, not required for preheating raw material, are by-passed through waste heat boilers to develop steam.

Increased kiln output and the desire to balance operating hours in related departments for the most economical balance of generated and

purchased electrical power necessitated enlargement and rebuilding of the crushing, screening, raw and finish mill departments.

An entirely new crushing and screening plant of increased capacity was built at the quarry and a specially-built system of belt conveyors was designed for delivery of mill feed, a distance of almost a mile to the plant. A new covered storage area for raw material was built. Formerly, raw materials were crushed through a gyratory crusher at the quarry and then delivered by aerial tramway in one-ton buckets to the mill where the ham-

mermill for secondary crushing and the reserve storage of mill feed material were located.

The raw mill department had a single B & W pulverizer of the ball-bearing type in closed circuit with a mechanical air separator for raw grinding. The building was extended and a new pulverizer of the same type was installed. Each pulverizer is in closed circuit with a mechanical air separator, and heated air is supplied for drying within the air separator by individual forced air heaters. The older pulverizer was rebuilt to make it identical with the new, improved unit.

Clinker grinding had been done through four 2-compartment mills closed-circuited with four mechanical air separators. Capacity to grind cement was increased more than 50 percent by conversion to two-stage grinding. This was done by installing two preliminary grinding mills and converting the compartment mills into



One of the quarries, showing crushing plant (left) and screening plant from which belt conveyor delivers stone 4400 ft. to cement plant

Photo—Colund Aerial Surveys

tube mills for finish grinding in closed circuit with the air separators.

The electrical distribution system was modernized to conform with the new requirements for power. There are three G.E. unit substations, two of which are for distribution of purchased power. The third provides generated power or purchased power according to need.

Operation of the quarry and the new crushing and screening plant is required five 8-hr. days per week to meet mill requirements. The raw mill and the finish mill are normally operated 16-hr. per day and the packing plant is on a one-shift schedule.

A single 3750-kva. turbine-generator is capable of generating a maximum of 3000 kw. which compares with a peak requirement of 5000 kw. Thus practice is to operate the kilns for best overall plant economy and not necessarily for best fuel economy in the production of clinker.

Performance of the No. 3 kiln with suspension preheater, which we discuss in detail later herein, therefore is not at its peak as measured by the

fuel requirement per barrel of clinker production. More than the normal proportion of the kiln exit heat gases than would ordinarily be by-passed to waste, if there were no waste heat boilers, is being diverted to the boilers for making steam. There are times, should one of the other kilns be down, when the preheater is by-passed entirely in order to produce more steam in the boilers.

### Kiln-Preheater

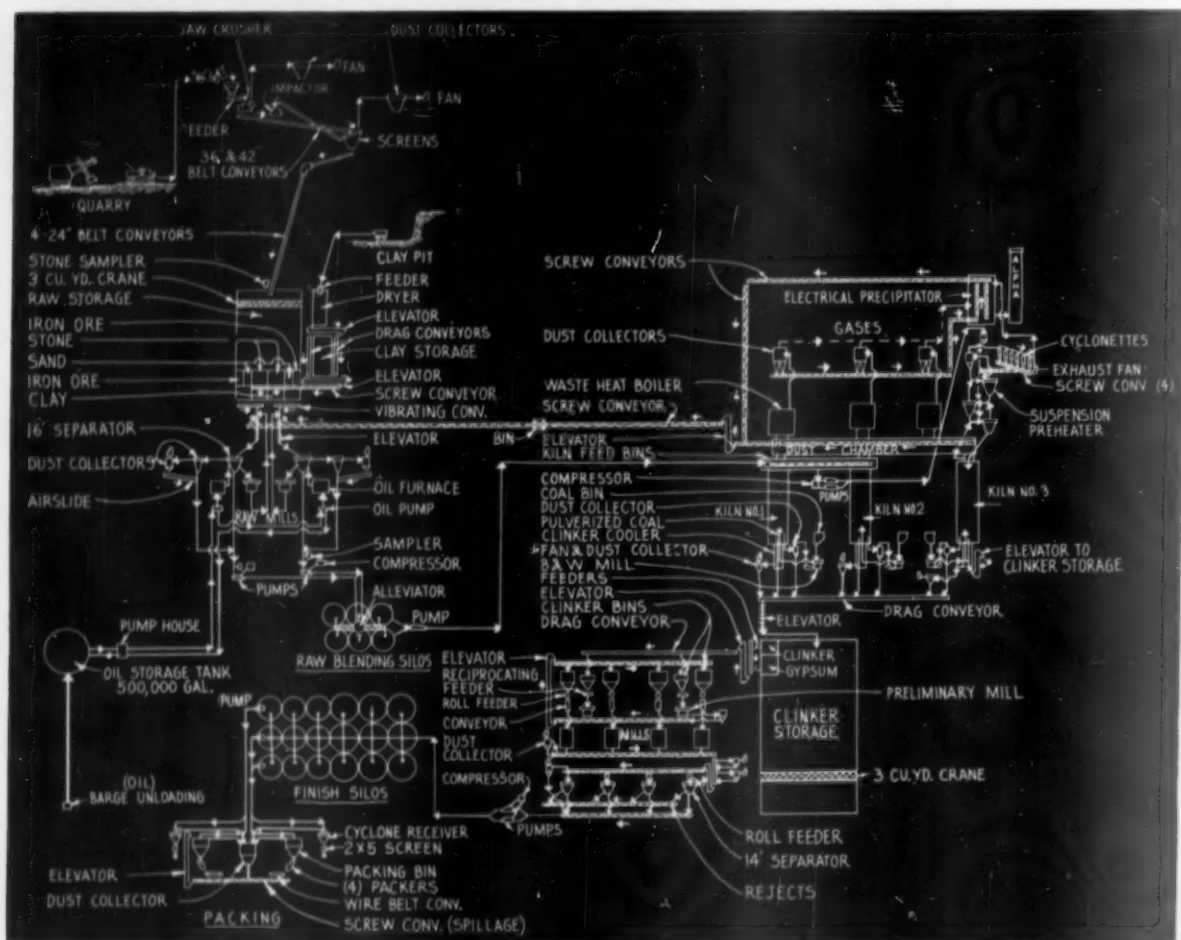
The preheater was designed and manufactured by Fuller Co. under license from Klockner-Humboldt-Deutz AG, Cologne, Germany. This is a four-stage system, wherein hot kiln exit gases are drawn through a series of cyclone collectors to preheat raw material in suspension as it travels counterflow down to the kiln feed pipe.

It is a closed system of cyclones with connecting ducts in which the raw material is introduced into duct No. 1 between stages Nos. 2 and 1 near the top (see schematic drawing). The material is alternately collected

and re-suspended for maximum contact with the hot gases in its flow down to the kiln feed spout from stage No. 4.

The preheater structure stands 130 ft. high. In addition to the cyclones and ducts, the installation includes a feed supply bin and F-K pumps delivering feed material to an overhead constant head feeder with overflow return to the feed bin. There is a group of six cyclonettes for dust collection ahead of the exhaust fan for the system, which discharges through an existing Cottrell electrical precipitator on the pressure side of the preheater fan to the stack. A valve above permits by-passing the preheater entirely.

Number 4 cyclone is 14-ft. diameter, Nos. 3 and 2 measure 12 ft. 10 in. and the two No. 1 cyclones through which the gas stream is divided are 6 ft. 6 in. in diameter. Stages 4, 3 and 2 are insulated with a 5 to 6-in. thickness of castable refractories. Temperatures through stage one are reduced to about 700 deg. F. so the small cyclones are not insulated. The cyclones and ducts are of conventional



Schematic flow chart of Catskill plant after completion of rebuilding program



black steel and aluminum painted. Stainless steel was used for the discharge duct from stage No. 4 and for some restriction points.

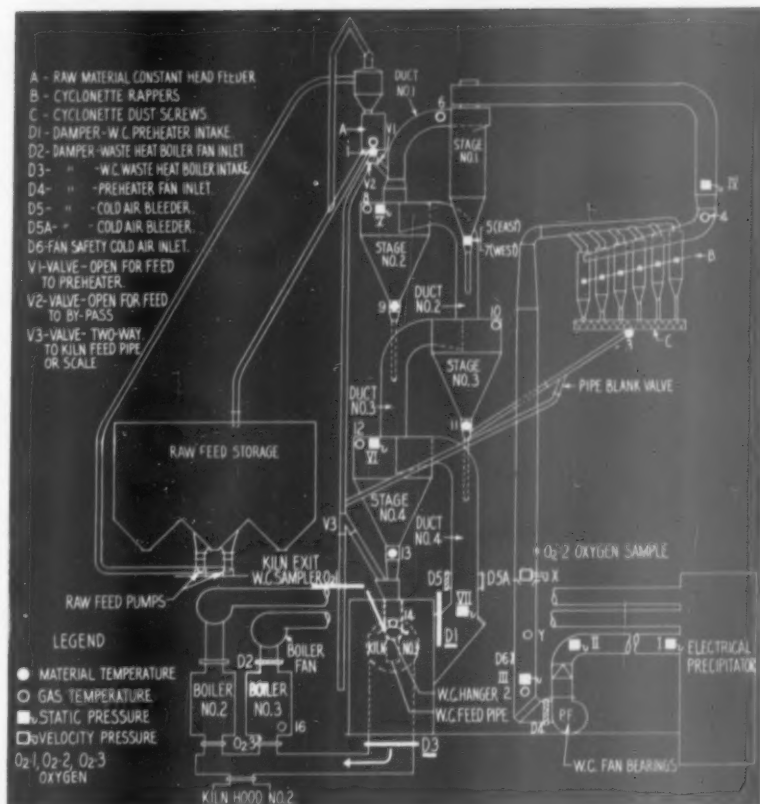
The system has a tight seal connection with the back end of the kiln to minimize air leakage as much as possible and the end ring of the kiln is cooled continuously by an air blast.

Gases are drawn from stage No. 1 through the six cyclonettes for dust removal. Discharge of dust from the cyclonettes is facilitated by air breathers attached to each. The air supply is solenoid-controlled and the solenoids are actuated by a timer. They are energized one at a time at five minute intervals, each being operative for 15 seconds out of each 15 minutes. The dust discharges into a common screw conveyor and is spouted into a pipe from which it can be diverted into the kiln feed spout or be by-passed.

Cleaned gases are drawn through a 50,000 c.f.m. Robinson Ventilating Co. fan, driven by a 400-hp. motor, which then exhausts through a 225,000 c.f.m. Cottrell electrical precipitator to the stack. This dust collector also handles gases exhausted from the three waste heat boilers. As part of the rebuilding program, three Multiclone dust collectors were installed to remove the bulk of the dust load from the waste heat boiler gases ahead of the Cottrell. Thus, the latter now has sufficient capacity for high efficiency collection in handling gases from all three kilns. Dust from the four collectors is normally returned by screw conveyors into the kiln feed bins.

As shown on the schematic drawing, dampers are provided to by-pass any fraction of the No. 3 kiln exit gases to the waste heat boilers. Dampers are provided for the preheater intake (D1), waste heat boiler fan inlet (D2), the waste heat boiler intake (D3), preheater fan inlet (D4), cold air bleeders (D5 and D5A) and for the fan safety cold air inlet (D6). Water-cooling is provided for the preheater intake damper, the waste heat boiler intake damper, the kiln feed pipe, the kiln feed pipe hanger, the O<sub>2</sub> analyzer sampler pipe, the preheater fan bearings and the F-K pump compressor. Softened cold water is supplied for this purpose at 150 g.p.m. and the overflow is used for boiler feed water.

Continuous O<sub>2</sub> readings are taken at the kiln outlet and also in the duct ahead of the preheater fan. Purpose of the latter is to detect quickly the occurrence of any leaks in the system which would reflect in a high reading. A drop-off from the holding point would indicate secondary combustion in the preheater and the result might be plugging in the system.



Schematic of preheater with all measurement points indicated for material and gas temperatures, static and velocity pressures

Material flow requires a travel time of 22 seconds through the preheater, and the design provides for a gas velocity in the range of 60—90 ft. per second through the ducts. Both the kiln drive and feeder drive are by d.c. motors for variable speed, but the rate of feed and kiln speed are adjusted separately by adjacent controls on the kiln operating panel.

#### Kiln

No. 3 kiln is of extra heavy duty construction and was designed and manufactured by Traylor Engineering and Manufacturing Co. to the company's specifications, in anticipation of higher than ordinary temperatures, load and speed. It has a slope of  $\frac{3}{4}$  in. to the foot and is equipped with two forged steel full-floating riding rings which run on two 42-in. diameter kiln roller supports. Tight-fitting seal rings at both the discharge end and feed end are cooled by an air blast supplied from a fan driven by a  $7\frac{1}{2}$ -hp. motor in each case.

The kiln shell is of  $2\frac{1}{4}$ -in. steel plate under the tires, tapering to 1-in., and the balance of the shell is  $\frac{7}{8}$ -in. plate. Every plate joint has an added stiffener ring, and the stiffener rings on each side of the tires are of extra large construction. The firing end is

detachable so that 3 ft. of length may readily be replaced if the end be burned off. The hot end is of heat-resistant nickel alloy steel.

The drive is a 60-hp. variable speed motor with speed reducer connecting to the girth gear and pinion, and the top speed is 112 r.p.m. Speeds thusfar have not exceeded 70—80 r.p.m.

Refractory lining is of 6-in. brick through the length of the kiln, starting with 5 ft. of 70 percent alumina wear-resisting brick at the discharge end and then 35 ft. of 40 percent steel-clad basic brick through the burning zone. This is followed by 66 ft. of 70 percent alumina brick, with 40 percent alumina brick extending to the back end of the kiln.

Production of the kiln is averaging 1800 bbl. of clinker per day when run at 70 r.p.m., with a feed of material preheated to 1400 deg. F. This compares with a normal production of about 1200 bbl. of clinker per day for a kiln of this size without preheater. At this rate of production, travel time through the kiln is about one-half hour as compared to 1 hr. 15 minutes through kilns Nos. 1 and 2.

The kiln is direct-fired by a B & W unit coal pulverizer and discharges clinker over a 4-ft. 6-in. by 49-ft. Style B Allis-Chalmers horizontal grate-type



Preheater fan has capacity of 50,000 c.f.m. and exhausts to electrical precipitator on pressure side

clinker cooler. The burner pipe is water-cooled.

#### Performance of Kiln and Preheater

Operation of the kiln with preheater started March 24, 1955, and has not yet reached optimum fuel performance. As this is written, the expected production has not yet been realized. Fuel consumption is averaging 70 lb. of coal per barrel when using a 13,500 B.t.u. West Virginia coal, but one-third of the kiln exit gases are being diverted to the waste-heat boilers for steam. The older kilns require 100 lb. of coal per barrel of production.

In addition to a desire for maximum production of clinker along with maximum contribution for waste heat power, a limiting condition has been inability thusfar to reach the maximum load available from the preheater fan. It has been limited to pulling 37,000 c.f.m. of gases and will be run at 50,000 c.f.m. after a correction in a main duct which has restricted gas flow. Then, possibly, 50 percent of total gases will be diverted for waste heat while 50 percent will be available for preheating raw material to 1400 deg. F. at a higher rate of capacity. It is anticipated, after changes and further

experience is gained, that average production will exceed 2000 bbl. per day with a fuel consumption of less than 60 lb. of coal per barrel. Calculations indicate that the balance of heated air (more than 400,000 B.t.u./min.) may be effective in developing 16—18 kw. of power per bbl. of kiln output as the potential production from No. 3 kiln.

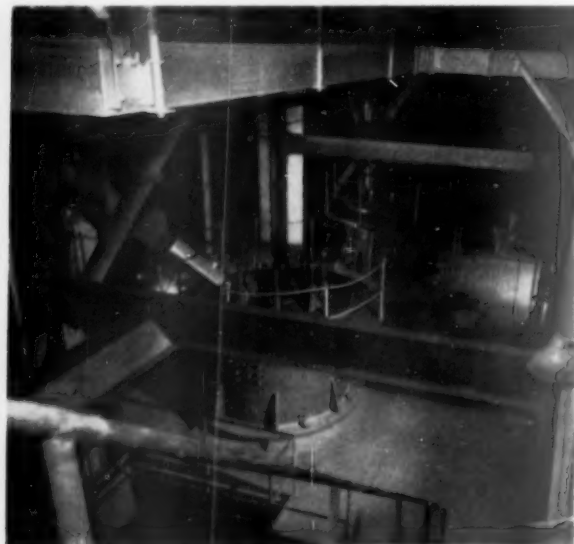
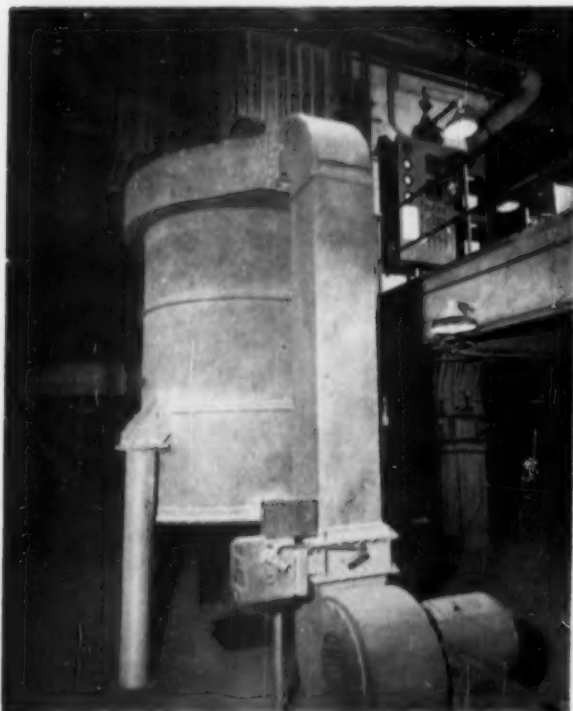
When maximum capacity is reached, the kiln will probably be driven at considerably higher speed. For each increment increase of 5 r.p.h. in kiln revolutions, starting at 40 r.p.h. with a production of 1200 bbl. per day, capacity has been increased by 100 bbl. per day in test runs, to reach the figure of 1800 bbl. production at 70 r.p.h.

Experience to date has indicated 1400 deg. F. to be the maximum preheat temperature desired. When the material is heated to higher temperatures, sticking has occurred in stage No. 4 of the preheater. This is probably due to calcination.

#### Operation of Preheater

Raw material for cement manufacture is a high silica mixture of lime-stones which would be classified as an unplastic material. It requires hard burning in the kiln at indicated burning zone temperature of 2800—2900 deg. F.

Thirty to 40 percent of the combustion air is preheated primary air drawn from the kiln hood for drying in the B & W unit coal pulverizer. The balance is largely secondary air sup-



Above: Two raw material pulverizers which are fed rejects from overhead air separators

Left: One of two forced draft heaters used to dry stone in air separators. Heater is fired by oil and is automatically controlled

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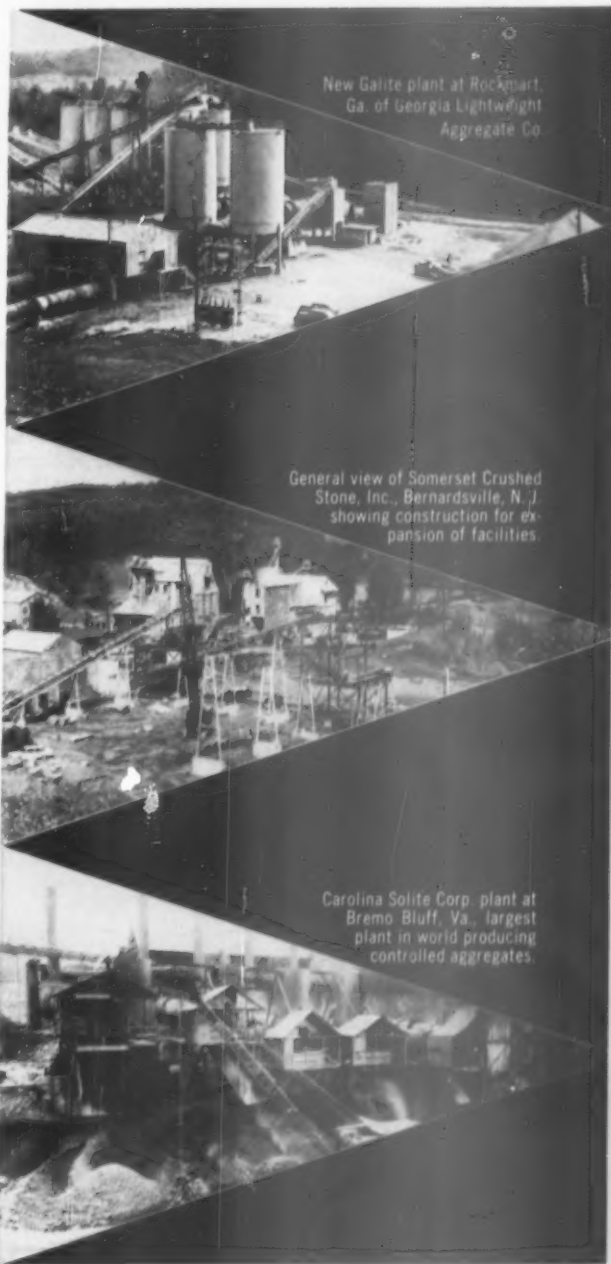
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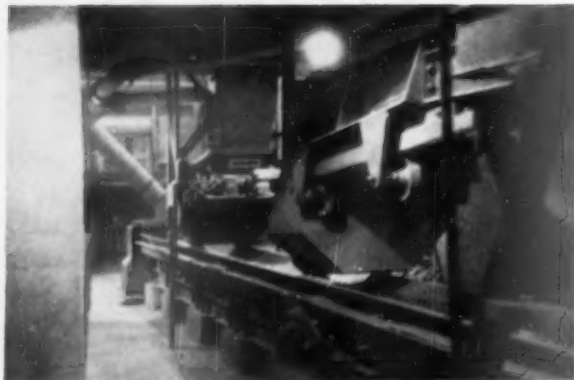
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**Pumps deliver raw mill product** into blending silos. Continuous samplers located at each pump.



**Vibrating conveyor** showing proportioning feeders for limestone and clay materials

plied from the air-quenching clinker cooler, which is preheated to about 1400 deg. F. through the clinker bed.

A variable-speed drive on the clinker cooler is the means of regulating the secondary air temperature. The cooler has the A-C pulsating bed feature for maximum heat transfer and discharges clinker cooled to 200 deg. F.

Firing is controlled to hold a negative hood draft of .06—.08 in. w.g. in order to prevent dusting at the kiln hood, and 1—2 percent  $O_2$  in the exit gases as measured at the outlet of the kiln. This reading is not permitted to fall below 1 percent as a safeguard against secondary combustion and resultant plugging in the preheater.

Exit gases have a temperature of 1750—1850 deg. F. as they enter the preheater duct and the feed material is preheated to 1400 deg. F. with the preheater exhaust fan drawing 37,000 c.f.m. Exhaust temperature of the gases leaving the preheater is 450—500 deg. F. Pressure drop through the preheater is about 28-in. w.g. Gas temperatures as measured by thermocouple just ahead of the preheater fan are held to 550 deg. F. by the automatic bleeding in of cold air.

The schematic drawing of the preheater shows the locations where readings are taken of material temperatures, gas temperatures, static and velocity pressures. Also shown herewith is a typical record of readings, taken when producing standard clinker at a rate of 1830 bbl. per day.

### Instrumentation

There are two control cubicles housing all measuring, recording and control instruments for the entire kiln-preheater operation. They are designed for maximum protection of the instruments against low temperatures, dust and mishandling. Each is lighted and has a space heater, a blower delivering outside air for positive pressure and a window through which the instruments may be read with the cu-

bicycle sealed. Telephone service is available between the two cupolas.

The kiln control cubicle, for the entire kiln operation, has on the front panel all motor on-and-off switches and speed controls, remote operating and indicating facilities for the various dampers, and alarm signals for improper kiln operation. On the inside and visible through the window are the indicators, measuring instruments and

controllers for direct operation of the kiln.

Among the items provided are the following:

Coal mill draft gauge indicator for the primary air differential, pulverizer differential, secondary air pressure and hot air to the mill.

Ammeters and starters for the coal mill and clinker cooler fan.

Hays recorder for grate pressure

PREHEATER OPERATION			OPERATOR	DATE						
STATION NOS	STATION IDENTIFICATION		SHIFT NO. 1		ATMO. TEMP.		WEATHER			
			8	9	10	11	12N	1	2	3
1	FEED SCREW DISCH	TEMP °F	160							
2	FAN INTAKE	"	480							
3	CYCLONETTE DISCH	"	580							
4	STAGE 1 TO CYCLONETTES	"	550							
5	STAGE 1 DISCH (EAST)	"	540							
6	STAGE 2 TO STAGE 1	"	600							
7	STAGE 1 DISCH (WEST)	"	540							
8	STAGE 2	"	940							
9	STAGE 2 DISCH	"	890							
10	STAGE 3	"	1180							
11	STAGE 3 DISCH	"	1130							
12	STAGE 4	"	1380							
13	STAGE 4 DISCH	"	1320							
14	KILN EXIT	"	1820							
	TEMP BURNING ZONE	"	2850							
I	FAN DISCH DUCT AT COTRELL	IN. H <sub>2</sub> O	+0.5							
II	FAN DISCH	"	+1.3							
III	FAN INLET	"	-4.5							
IV	DUCT BETWEEN STAGE 1 & CYCLONETTES	"	-27.0							
V	STAGE 2	"	-14.0							
VI	STAGE 4	"	-2.5							
VII	DUCT 4 - PREHEATER ENTRANCE	"	-0.2							
O <sub>1</sub> 1	KILN EXIT	O <sub>2</sub> %	0.5							
O <sub>1</sub> 2	FAN INLET	"	—							
O <sub>1</sub>	DAMPER POSITION	OPEN %	100							
O <sub>1</sub>	" " "	"	100							
O <sub>1</sub>	" " "	"	44							
O <sub>1</sub>	" " "	"	100							
O <sub>1</sub>	" " "	"	0							
	COLD AIR TO STAGE 1	"	0							
	FAN KW (310 full load)	"	205							
	COUNTER READING	"								
	RAW FEED BPM	"	8.5							
	KILN RPM	"	65							
	TYPE CEMENT	"	GEN							
	AIR TEMP TO KILN	"	1450							
	COAL RATE	"	70 LB / BBL							
	CLINKER RATE	"	1830 BBL / DAY							
	COAL COUNTER	"	—							
	HOOD PRESSURE - DISCHARGE END	"	-0.07							
	HOOD PRESSURE - FEED END	"	-0.10							
	TEMP #16	"	1310							
	LOG REFERENCE NO	"								

This record sheet, with actual operating figures for the preheater under typical normal conditions, is filled in regularly as a check on performance.



and air flow of clinker cooler.

Cooler speed indicator and pulsating damper feed control for the cooler.

Lights and buttons for the cooler drive, pulsating damper and cooler fan.

Fan speed adjuster for the cooler drive and cooler fan damper regulator.

Lights and alarms to notify the operator if the preheater fan be overheated or not running.

Preheater fan ammeter.

Damper control selector and position indicators (manual and automatic) for preheater fan, cold air intake damper and waste-heat boiler intake damper.

Raw material feeder speed indicator and kiln speed indicator which are side by side for convenience.

Lights and buttons for the preheater fan, dust collector conveyors, kiln feeder and kiln drive.

Feeder speed control.

Position indicator of by-pass for the preheater (automatic or manual).

L & N Speedomax—16 pt. recorder for preheater temperatures (see schematic).

L & N Speedomax recorder for kiln and feeder speed.

L & N Speedomax recorder for  $O_2$ .

L & N Speedomax recorder for burning zone temperature.

L & N Speedomax preheater fan load controller.

L & N Speedomax recording secondary air temperature.

Bailey kiln draft recorder.

The preheater control cubicle is on the second floor of the preheater structure. It has no operating controls but is the location of metering and recording instruments required for long-range evaluation of the preheater operating characteristics. The cubicle also houses various damper control motor starters.

#### Indicators

Included in the instruments are the following:

Oxygen analyzer and recorder

Oxygen sample selector valve motor  
16-pt. preheater temperature indicator

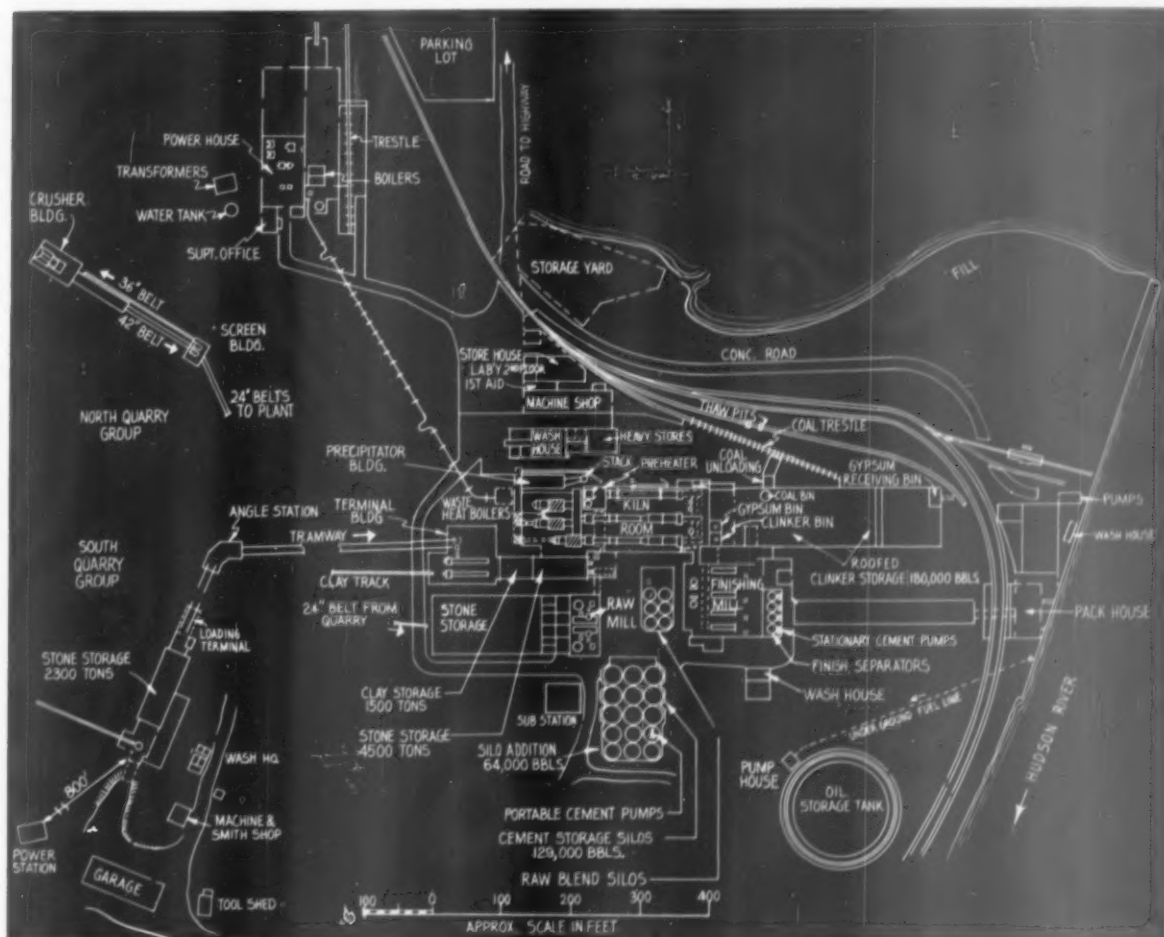
2-pt. Bailey draft recorder

Cyclonette air rapping timer

#### Operation

As indicated from the schematic of the preheater and the record of typical readings, temperature readings for the material and the gases follow a progressive pattern up and down, respectively, in flow through the preheater if there be no plugging. The operator is principally concerned with the preheater fan intake temperature and the material discharge temperature. Should any of the temperature lines on the 16-pt. recorder cross, indicating something wrong, the fan ammeter is checked for a drop in load which would indicate plugging and the need for corrective action. The fan load will show up such a condition before temperature readings indicate the occurrence.

The correct draft is determined from  $O_2$  readings which are maintained at 1 - 2 percent in order to prevent combustibles from entering the preheater. The burner selects the required draft and sets this value into the draft controller in the kiln cubicle. The controller will control the preheater intake



General layout of Catskill plant after extensive rebuilding was completed



**Instrument panel** for new kiln with preheater. Note that principal recording instruments are inside pressurized cubicle

damper and/or the waste-heat boiler fan damper to hold constant draft.

Selection of which damper or dampers are to be used for automatic controls and which are to be hand controlled may be made from the front of the cubicle by a 4-position transfer switch. The indicator for position of these dampers is on the front of the cubicle.

Pressure differential inside and outside the firing end of the kiln hood is used by the L & N kiln draft controller as an indicator of kiln draft. The dampers are motor-operated by L & N electric drive units which are controlled by reversing starters. Limit switches prevent over-travel of the dampers. A call for increased draft will open the preheater damper and close the waste-heat fan damper.

Should the preheater fan stop due to overload, motor failure or manual stopping, a relay across the fan starter coil sounds an alarm and lights the warning light on the kiln floor.

A bulb-type temperature sensing device measures the temperature of the fan inlet gases. If the temperature should exceed 550 deg. F., a contact closes energizing a relay sounding the alarm and lighting the warning light. Should the figure reach 600 deg. F., another contact closes, energizing a circuit to an electric valve to bleed cold air into the fan inlet. This valve closes when the temperature returns to normal.

Kiln speed and feeder speed are transduced by L & N generator tachometers driven from the kiln drive motor shaft and the feed screw motor shaft.

### Power

Two of the waste-heat boilers are rated at 750 hp. per hour and the third is 1100 h.p. per hr. The smaller units are each capable of delivering 26,000 lb. of steam per hr. at 225 p.s.i. and the larger one delivers 28,000 lb. per hr. The 3000 kw. turbine uses 12.5 lb. of steam per kw. of generated power and 28 kw.h. are needed per bbl. of cement produced.

Power purchased from the Central Hudson Power and Light Co. is brought in at 66,000 volts to a metering station and there are three distribution substations. A 1500 kv.a. unit substation located at the quarry is exclusively for purchased power. It supplies the shovel motor-generator sets and the motors for the belt conveyors in the crushing-screening plant, the crushers, dust collectors and accessory equipment.

A new 2500 kv.a. substation near the stone storage was provided as a source of purchased power, supplying power for the conveyors from the quarry, three of the tube mills, the preliminary finish mills, the blending silos, F-K pumps, packhouse and related equipment.

The 2000 kv.a. substation in the power house has two busses, for either purchased or plant-generated power. It supplies power for much of the auxiliary equipment including boiler fans, air compressors, water pumps, auxiliary equipment in the finish mill department, the coal grinding department, kiln room and No. 4 tube mill. Under normal conditions, waste heat power is sufficient for these purposes,

but purchased power is available to make up any deficiency. Normally the plant generates 2400 kw. against a total requirement of 5000 kw. Maximum generated power would be 3000 kw. if the preheater on kiln No. 3 be by-passed and should all three kilns be operated to generate power.

### Raw Materials

Limestone used for cement manufacture is quarried from a series of formations nearly a mile west from the plant. The area has been tilted and is highly faulted, with the result that five separate formations of limestone are encountered in quarrying. The distinct layers vary in thickness and calcium carbonate content, and they dip from west to east at about a 35 deg. angle. Quarry operations are carried forward to the north and south, cutting across the several formations in order to excavate a cross-section of limestone with the desired composition for cement manufacture.

The 80-ft. quarry working face is perpendicular to the strike of the rock and takes in the five distinct formations. Consecutively from top to bottom the formations are Glen Erie, Port Ewen, Alsen, Becraft, and New Scotland limestones.

All these limestones are extremely low in magnesia, but contain the other constituents in the proportions necessary for portland cement manufacture. Any mixture of stone from the several formations yields an average composition high in silica.

The Upper Becraft contains  $\text{CaCO}_3$ , in excess of the 79 to 80 percent carbonate holding point required to manufacture a cement with 45 percent  $\text{C}_2\text{S}$ . Alsen stone occasionally exceeds the carbonate holding point, and the others are on the low side. The Upper Becraft limestone is a 30-ft. layer as is the Lower Becraft and the Alsen stone is 20 ft. thick. The face in the main quarry is cut across the formations so that these three limestones represent the bulk of the tonnage blasted down. A far lesser amount of Glen Erie and New Scotland limestones is brought down on the outer edges of the quarry face.

Until three years ago, only the higher grade limestone was used and the mix was adjusted through blending with clay. Source of clay was a nearby pit and that material was dried and handled into separate storage. This selection of limestone necessarily limited quarry operations to narrow faces. There was great wastage and quarrying operations necessarily were not efficient or of high capacity.

Before undertaking the expansion program, the company made an exhaustive, long-range survey of its raw

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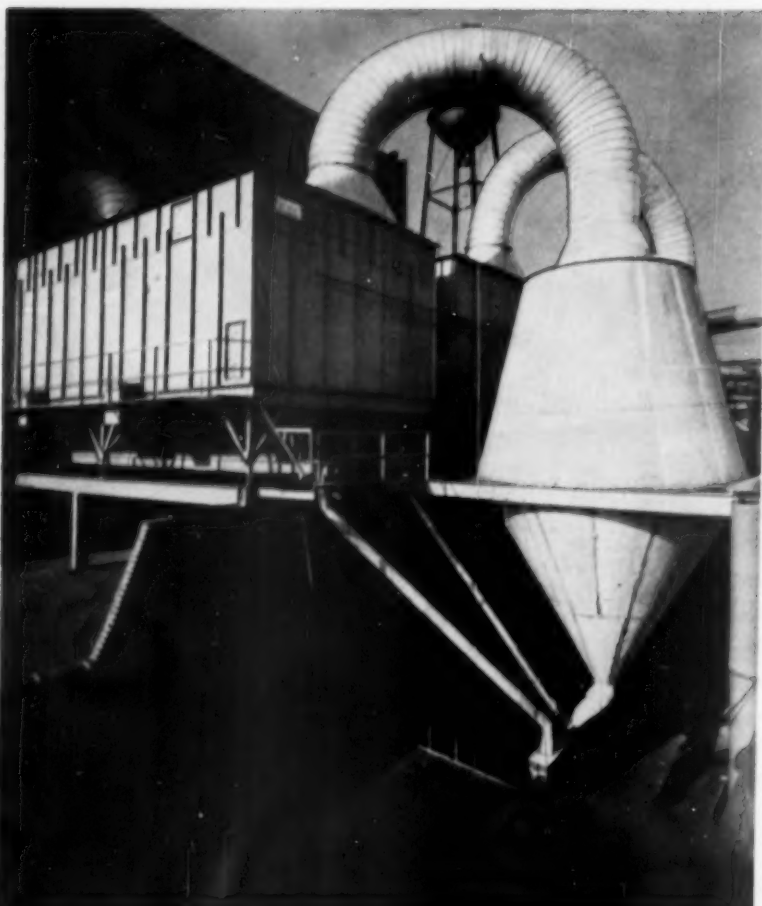
*A postcard will  
bring you this  
Data Book &  
Screen Selector,  
full of helpful  
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Write today!*



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WEST COAST: STAR WIRE SCREEN & IRON WORKS, INC., 2515 San Fernando Rd., LOS ANGELES; Subsidiary, LUDLOW-SAYLOR WIRE CLOTH CO.



## Dust got their goat at Amalgamated!

**Pangborn rids plant of goatskin dust, gets higher production at lower cost.**

Processing 25,000 goatskins daily created a serious dust problem for Amalgamated Leather Co., Wilmington, Del. Dust was so thick during the buffing operation that workers had to stop every half hour to clean up. Pangborn Dust Control solved this problem. The atmosphere during buffing is now clean. Workers do better, *continuous* work. Plant and machinery maintenance costs are lower. No wonder Amalgamated says Pangborn is "really doing a job!"



See how Pangborn benefits varied industries. Write for free copy of "Out of the Realm of Dust." Pangborn Corp., 4300 Pangborn Blvd., Hagerstown, Maryland.

# Pangborn

**CONTROLS DUST**

Pangborn can solve your dust problem. Pangborn engineers will be glad to show you how Pangborn Dry or Wet Dust Collectors can save you time, trouble and money!

material resources to determine its reserves and a pattern for more efficient quarrying. Prof. Newton Chute of Syracuse University was engaged to make thorough exploration of the entire property, involving extensive surface study and core-drilling.

His findings were charted in detail and are the basis for present quarrying operations. The clay pit has been abandoned and present quarry development is such that the working face includes cutting across sufficient of the lower grade beds in addition to the higher grade stone to arrive at the desired chemical composition without use of clay in the mix.

At the present time, three separate quarries are under excavation. The quarry floor in each case is at the same elevation. However, the surface topography in the area varies extensively so that quarry face development results in different proportions of the various limestones being brought down in blasting. Width of face is also a factor in arriving at the desired combination of limestones.

Having more than one face provides the flexibility for economical quarrying. For example, it is desirable to work the north face of quarry No. 1 with a face width of about 200 ft. The amount of Upper Becraft stone available in that width of face is insufficient for correct composition. By also using Upper Becraft stone from quarry No. 2, which is being cut largely through that stone, the correct proportions may be delivered to the crushing plant while permitting most economical operation of quarry No. 1.

Stone from the two separate working faces is delivered to the crushing plant by trucks in the approximate required proportions. The spotting of the shovels is also governed according to the requirements of the chemist. A check is taken on the calcium carbonate of the stone as delivered by



Truck dumping 10-ton load into hopper from which feeder delivers to 48- x 60-in. jaw crusher. Hopper is designed for dumping into three sides



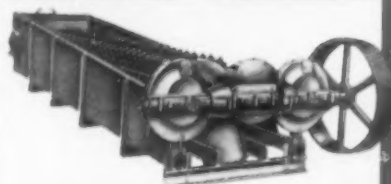
# MCLANAHAN

for dependable-low cost  
FEEDING, CRUSHING, CLEANING in



McLanahan Single Roll Crusher for primary or secondary work on shales, limestones, etc.

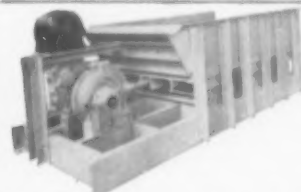
A pioneer in the development of many types of processing equipment, McLanahan has served domestic and foreign pits, mines and quarries for more than a century. Shown on this page are a few illustrations of McLanahan equipment for crushing, washing, sizing and conveying all types of ore, coal and rock. Technical details and price information will be sent upon request.



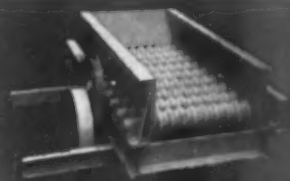
Leg Washer for removing tough clay and soft rock from various materials.



Steel Paddle Mill Scrubber—high capacity for cleaning large size feed.



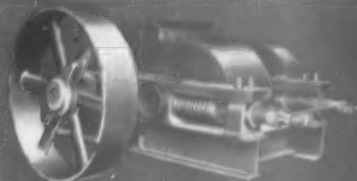
Heavy Duty Reciprocating Plate Feeder. Handles any material from sand sizes to shovel loaded rock and ore.



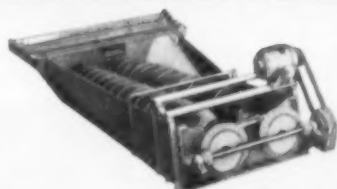
Low roll dryer for drying and feeding material.



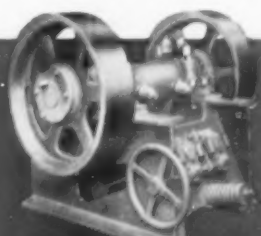
Double duty combination Scrubber and Sizing Screen for large and small capacities.



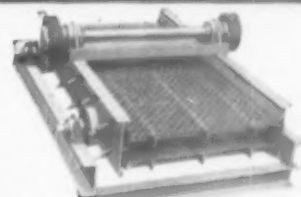
Heavy Duty Patented Double Roll Crusher for secondary reduction of rock and ore.



Double Screw Washer (with gear cover removed), for removal of waste and water from sand and similar materials.



Portable Jaw Crusher for primary and secondary work.



Single and Double Deck Vibrating Screens in different sizes.

## MCLANAHAN & STONE CORPORATION

Pit, Mine and Quarry Equipment Headquarters Since 1835  
Hollidaysburg, Pennsylvania

### DEPENDABLE PRODUCTS:

Single and Double Roll—and Jaw  
Crushers, Trucking Plants, Washers,  
Sizing Plants and Apron Feeders,  
Roll Grinders, Conveyors, Dryers,  
Pulverizers, Screens, Washers, Feed  
Washers, Screw Washers, Roll  
Dryers, Rotary and Apron Feed  
Dryers, Apron Feeders, Pulver-  
izers, Grinders, Sizers, Washers,  
Screens, Rollers, and many more  
for pits, mines, quarries, and  
factories and plants.



One of two shovels loading truck in quarry. Note dip of rock strata and good breakage

belt conveyors to storage at the mill, every three hours. Practice is to deliver stone of the approximate required analysis and also to provide a supply of high calcium limestone in storage for intermixing with the regular run by the crane operator in filling the raw mill feed bins. Sampling of the raw mill product is also done by automatic samplers and hourly analyses are made from these samples as the product of the pulverizers is delivered into blending silos. The blending silos contain material ranging from 78-82 percent  $\text{CaCO}_3$  and the blend from combinations of these silos as drawn for kiln feed is also analyzed at two-hour intervals.

### Quarrying

Quarries No. 1 and No. 3 are being worked so as to become a single quarry with a face 80 ft. high and 200 ft. wide. Drilling equipment comprises a well drill, two conventional wagon drills and a new Gardner-Denver-Air-trac wagon drill for drilling  $3\frac{1}{2}$ -in. holes. The latter drill can drill up to 5-in. holes and up to 100-ft. depths using sectional drill steel. It delivers more tons per day than the well drill and has many other advantages in these quarries.

Smaller holes, when spaced 14 ft. apart with 12-ft. burden for 2-row shooting, result in better breakage and have eliminated sizeable backbreak. The drill is moved over the rough terrain much easier and quicker than a well drill may be re-located, and it is sometimes used for snake-hole drilling. Blasting is done with Primacord and electric blasting caps.

Excavating equipment consists of  $2\frac{1}{2}$ -cu. yd. and 3-cu. yd. Marion shovels with Ward-Leonard control, and delivery equipment comprises five Mack end-dump trucks of 10 tons capacity.

An entirely new crushing and screening plant was built at a central point with respect to the quarries and a belt conveyor system installed for delivery of sized material into a new covered storage building at the mill. The plant was designed for a production of 250 t.p.h. of minus  $\frac{3}{4}$ -in. stone, requiring five single shifts of operation per week. Mill requirement is 615 lb. of fresh raw material per bbl. of production.

The crushing and screening buildings are of structural steel and concrete construction, completely enclosed with Transite siding and equipped with dust collectors. Limestone is dumped by the trucks into a hopper at quarry-floor level that was designed to permit dumping into one end or either of the two sides.

Below the hopper is a 60-in. x 18-ft. 9-in. Pioneer pan feeder to regulate the flow into a 48- x 60-in. Traylor jaw crusher. The feeder is started and stopped by a push-button on a panel at the hopper for the conveni-

ence of the operator. Driven by a 200-hp. motor, the jaw crusher is rated 250 t.p.h. of minus  $3\frac{1}{2}$ -in. product. A 42-in. inclined belt conveyor rated at 500 t.p.h. (No. 1) delivers the crusher product into the screening plant where the flow is divided over two 5- x 14-ft. double-deck Ty-Rock vibrating screens. The screens are enclosed and make a separation at  $\frac{3}{4}$  in. Plus  $\frac{3}{4}$ -in. stone is returned over a 36-in. inclined belt conveyor rated at 375 t.p.h. (No. 2), to the crusher building and put through a Williams No. 475 reversible impactor which is driven at 900 r.p.m. by a 400-hp. motor. The primary belt returns the impactor product along with the jaw crusher output to the vibrating screens. Circulating load between the screens and impactor is about 100 percent.

An R.C.A. metal detector is located at the point where the primary crusher discharges on to the primary belt conveyor, and the conveyors and all equipment are electrically interlocked to shut the motors down in sequence when operations are stopped. The crushing plant is vented by a Sly Dynaclone dust collector of 9500 c.f.m. capacity, and a similar unit of 8500 c.f.m. vents the screening plant. Dust is returned into process in both cases.

### Conveyor System

The belt conveyor system, delivering  $\frac{3}{4}$ -in. minus stone from the screening plant to the mill, follows the natural topography of the region over the hills and depressions. It totals 4411 ft. in length and has a cumulative decline of 192 ft. to the plant.

A feature of the conveying system is that standard sectional conveyor units were used, built close to the ground to follow the terrain so as to eliminate the necessity for a great number of footings. If standard stringers and decking had been used, nearly

**Aerial view** shows new crushing and screening plants, left, and entire belt conveyor system supplying stone to cement mill, above

Photo—Colund Aerial Surveys, Pittsfield, Mass.



three times as many footings would have been needed.

There are four separate 24-in. belt conveyors designated as Nos. 3, 4, 5 and 6 in sequence. Conveyor No. 3 is 1425 ft. long; No. 4, 892 ft.; No. 5, 721 ft.; and No. 6, 1373 ft. They operate at 400 f.p.m. and have a capacity of 300 t.p.h. in handling  $\frac{3}{4}$ -in. minus stone. Conveyors Nos. 3 and 4 are driven by 50-hp. motors and Nos. 5 and 6 by 30-hp. motors. Conveyors Nos. 3, 5 and 6 are overland conveyors which make both incline and decline runs. Conveyor No. 4 is a decline conveyor.

Troughing idlers are 5 in. diameter spaced on 5-ft. centers and 5-in. diameter return idlers are spaced on 15-ft. centers. Hinged covers are used for the entire length of conveyors. Where conveyor No. 4 crosses New York Highway 9-W and the New York Central Railroad tracks, a totally-enclosed 70-ft. gallery truss with 18 deg. slope was erected to prevent spillage.

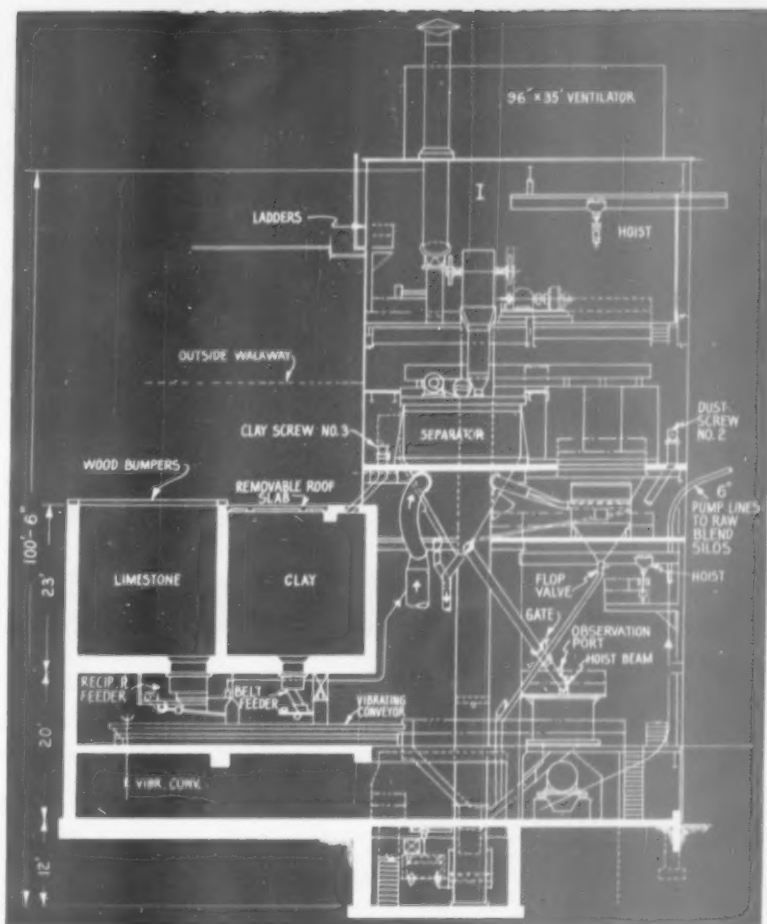
Standard sectional-type conveyor truss sections were used throughout with an average of 37 ft. spans between supports. At the junction of conveyors Nos. 4 and 5, a 30-ft. high baffled chimney chute was used to simplify the drive on conveyor No. 5. All head and tail terminals were specially engineered to meet the junction and drive connections.

Hewitt-Robins had the contract to supply the belting and machinery, and to do the engineering and installation for the conveyor system. The same company also supplied the belting and conveyors in the crushing and screening plant.

Delivery of stone is into one end of a new covered storage area, 200 ft. in length (10 bays) which has a capacity of 10,000 tons. A 3-cu. yd. P & H overhead electric crane, on 80-ft. centers, handles the stone in storage and is used for blending and for filling the raw mill feed bins at the far end of the structure. An automatic sampler was provided at the discharge end of conveyor No. 6 as a means to check on the quality of stone delivered into storage.

#### Raw Mill

Raw grinding capacity was more than doubled by installation of a second raw grinding circuit, consisting of a B & W series 300 center-discharge pulverizer in closed circuit with a 16-ft. Sturtevant mechanical air separator. The separator is supplied heated air by a Todd Thermo air heater. Rebuilding of the older grinding circuit to conform with design of the newer circuit increased its capacity by 5 t.p.h.



Vertical section drawing of raw mill building showing closed circuit arrangement of mechanical air separator with pulverizer, proportioning feeders and feed bins

The old grinding circuit was fed pre-dried raw material and had a capacity of 40 t.p.h. of material pulverized to a fineness of 88-91 percent passing a 200-mesh sieve. Each of the present circuits, with its individual air heater supplying heated air through the air separator for drying, has a capacity of 45 t.p.h. Each grinding circuit is separate from the other so that either may be operated if the other be down.

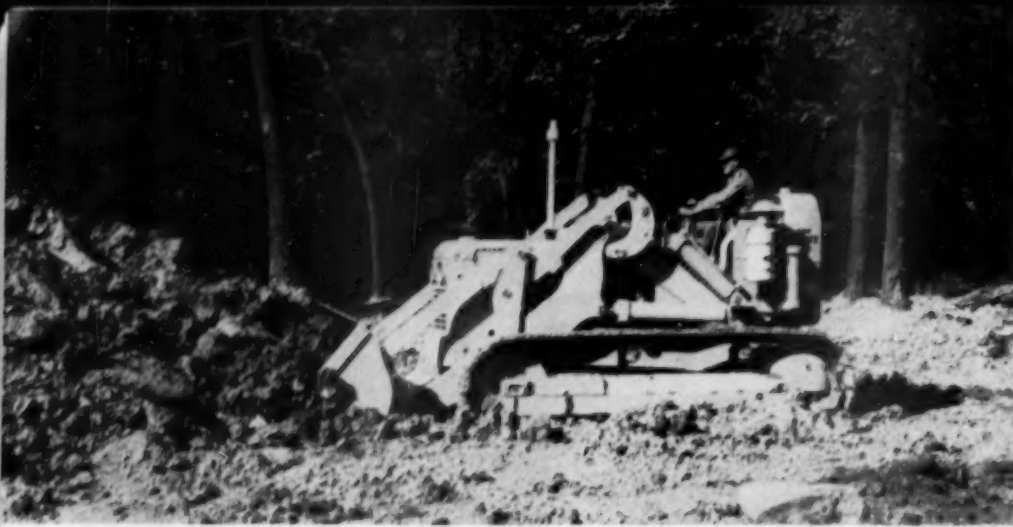
The mill building adjoins the end of the new limestone storage area and material is drawn from feed into the grinding circuits from supply bins fed by the overhead crane. There are two large limestone feed bins, clay bins and, in addition, there are two smaller feed bins on either side of the limestone bins for sand and iron ore. Limestone presently is the only raw material used but the smaller bins and the clay bins with proportioning feeders below were provided in the event any of these materials might be required at a later date for mix adjustment.

Limestone for each grinding circuit

is fed from the overhead bin by a 28-in. x 7-ft. 6-in. Link-Belt reciprocating feeder to a 50 t.p.h. Carrier vibrating conveyor delivering into an enclosed bucket elevator which elevates the feed into a 16-ft. Sturtevant mechanical air separator. Rejects from the air separator are the feed to the pulverizer and the fines are pumped to the blending silos. The feeder is of the volumetric type and is driven by a 3-hp. variable speed motor. It has a range of 20-60 t.p.h. A Hardinge type C constant-weight belt feeder was installed below the sand, iron ore and clay bins. The iron ore and sand feeders are set up to deliver material to a 4-t.p.h. Carrier vibrating conveyor on either side, transferring to the larger vibrating conveyor for inter-blending with the limestone. Clay would be proportioned on the main vibrating conveyor.

These grinding circuits carry a circulating load of 500-600 percent. The elevator in each case has a capacity of 450 t.p.h. and is driven by a 60-hp. motor.

(Continued on page 102)



**1**

Ample power  
and traction to  
"bury" the bucket.

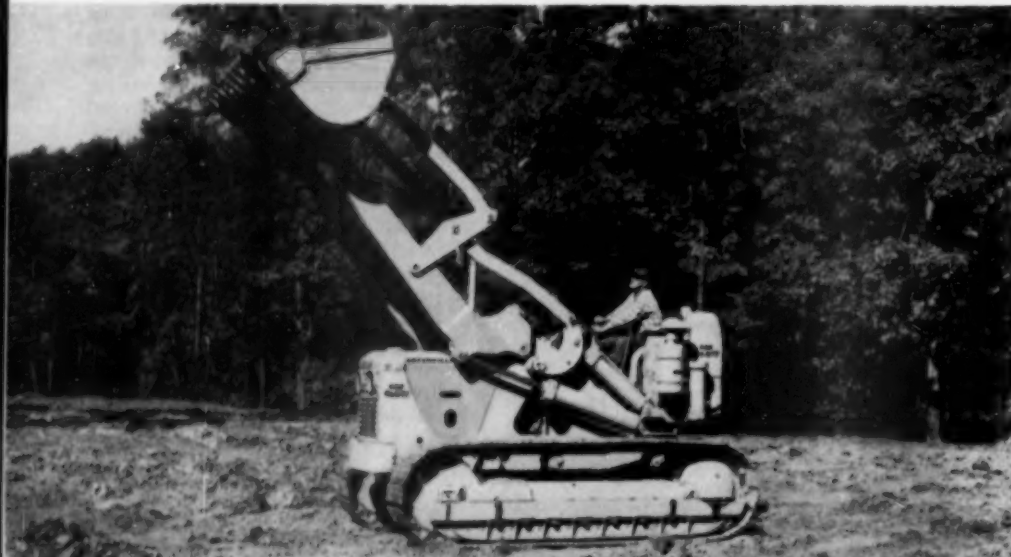


## CATERPILLAR ANNOUNCES THE NEW NO. 977

Here's the new boss of the excavator-loaders...the new Caterpillar No. 977 Traxcavator. The No. 977 has important new features which greatly increase productivity and earning power.

### FEATURES OF THE NO. 977 TRAXCAVATOR

- 96-in., 2¼-cu.-yd. bucket.
- 100 HP CAT® Engine, with ample power to "bury" the bucket and lift big loads.
- Newly-designed bucket tips back 40° at ground level to retain heaping loads.
- More than 11½ ft. of dumping height make it easy to load any truck or railroad car.
- Steel bumpers on lift arms allow rapid jarring of bucket, and 50° discharge angle helps to empty sticky materials fast.
- Automatic kick-outs put bucket in "hold" position at maximum height and position bucket for digging on next pass. Easier operation and faster cycle times.
- Advanced hydraulic system, with pump protected by full flow filter.
- Hardened, spool-type operating valves located in large tank, protected from dirt or damage.
- Long-lived, trouble-free oil clutch.
- Fast, one-hand bucket operation. High seat for comfort and visibility.
- Five forward speeds to 7.4 MPH; four reverse speeds to 7 MPH.
- Each track controlled by heavy-duty dry multiple disc steering clutch and contracting band brake.
- Tools for any job: 3-yd. bucket for light material; 9-tooth quarry bucket; heavy-duty bucket; skeleton rock bucket; log and lumber fork.



**3**

High lift,  
with over 11½ ft.  
of dumping height.





**2**

40° tip back  
at ground level  
to hold load.



# TRAXCAVATOR\*

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Please send full information about the new No. 977 Traxcavator.

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Now three sizes of Traxcavators are available for all your excavating and material-handling needs. They're *unit-built* machines, so efficient that you'll find they match or excel competitive equipment with nominally greater bucket sizes. You can choose the right Traxcavator for your job from the No. 933 (1 cu. yd.)—the No. 955 (1½ cu. yd.)—or the No. 977 (2¼ cu. yd.).

Let your Caterpillar Dealer show you how these new machines can make money and *save* money for you. Get complete information from him. Or mail the coupon.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

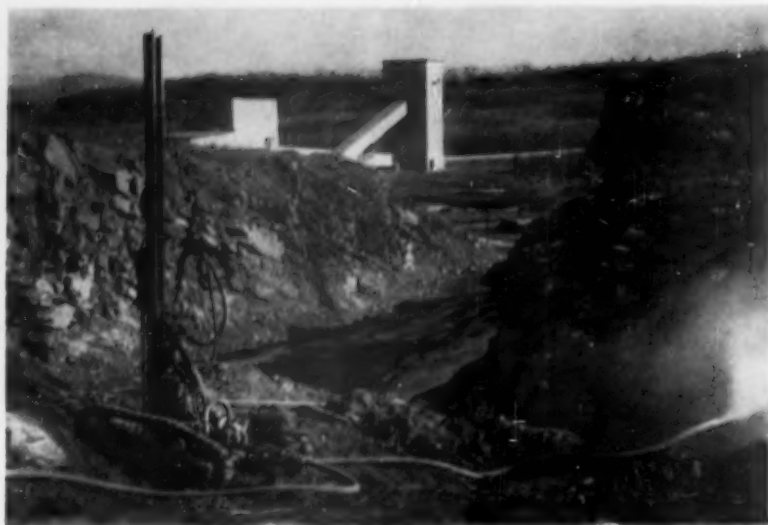
# CATERPILLAR\*

\*Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

**4**

Fast, sure  
dumping of sticky  
materials.





Large-hole wagon drill, showing new crushing and screening plant in background

## ALPHA MODERNIZES

(Continued from page 99)

Each grinding circuit is vented by a Buell 8-in. type LR dust collector exhausting to a 35-ft. Norblo bag-type collector of 19,000 c.f.m. capacity at 180 deg. F. and 7-in. static pressure. Dust from the bag-type collector, conveyed by F-H Airslide, and that from the scalper collector, are spouted into the Fuller-Kinyon pump hopper from which the air separator fines are pumped into the blending silos.

Heated air for drying is introduced into the air separator from a Todd direct-fired air heater. These heaters are fired by bunker C fuel oil and have a capacity of 16,500 c.f.m. at 800 deg. F., delivering a peak of 18,650,000 B.t.u. per hr.

A thermocouple at the combustion outlet of the furnace varies the fuel rate automatically to hold a set temperature of 1300 - 1400 deg. F. at that point. The primary control is to hold the temperature at the bag-type dust collector not to exceed 170 - 220 deg. F. A thermocouple at that point automatically actuates the combustion air fan damper permitting more combustion air to be forced into the system if the temperature at the dust collector drops below the set figure. As more combustion air is forced into the combustion chamber, the temperature at the outlet of the combustion chamber will fall. A fuel control valve will then open causing more fuel to pass into the system and restore the temperature at the combustion outlet. Equilibrium is quickly reached.

In order to hold the temperature within safe limits at the dust collector, heated air is delivered into the air separator at 700 - 800 deg. F. The furnace may be operated automatical-

ly or manually through controllers on the instrument panel. Fuel consumption is about 1/2 gal. of oil per ton of stone dried.

Oil storage of 500,000 gal. was provided in a 65-ft. diameter by 21-ft. high tank surrounded by a 5-ft. high dike 160 ft. in diameter. The tank, lines and service pumps are heated to 100 deg. F. since a heavy grade bunker-type fuel oil is used.

Pulverizers are of the ball-bearing type with adjustable spring loading of the grinding elements. This adjustment is done regularly as part of a program of preventive maintenance of the mills. The pulverizers are inspected each night and the pressure rings are screwed down weekly to minimize wear. By alternating grinding ball sizes as they become worn to a definite diameter, two sets of balls are worn out with each set of rings, in order to prolong life of the rings. The pulverizers are driven at 900 r.p.m. by 600-hp. wound rotor motors. Experience with the older pulverizer has been satisfactory with respect to maintenance, due in part to the preventive maintenance program.

Instrumentation for the raw mills includes ammeters for the principal equipment, alarms for the feeders, mill air pressure indicators, controls for the feeders, oil indicators, heated air temperature indicators, Wheelco Capacitrol temperature controllers for the combustion outlets of the hot air furnaces and the dust collector temperature. Also, there are feeder speed adjusters for changing the pitch of the pulleys for Reeves drives on the limestone feeders and a schematic for the blending silos with lights indicating "full silo" and when the gates are open for filling.

Finished product from each air sep-

arator is pumped to the blending silos by an 8-in. F-K pump. Samples for test are taken at each pump by an automatic sampler. There are two rows of three 30-ft. high blending silos holding a total of 3120 tons. A Turner & Hawes Aeroturn dust collector atop the silos is used for venting and the dust is returned into the silos.

Raw mix as delivered into the blending silos has little variation in composition within the respective silos, due to careful checking and analysis starting from selective quarrying on through the milling, so no interblending within silos as such is required. Minor variations are compensated for by drawing from two or more silos simultaneously for delivery to the kiln feed bins. Each silo has a flat bottom and five equally spaced draw-off chutes with Fuller rotary feeders. The feeders have variable speed drives to control the proportionate amount to be drawn from the separate silos. Beneath each row of silos is a common screw conveyor with cross screw and a single screw conveyor delivering into the feed hopper of an 8-in. F-K pump delivering to the kiln feed bins. These bins hold a 16-hr. supply of feed for the kilns.

## Finish Mill

Cement grinding capacity was increased more than 50 percent by installation of two preliminary mills and the conversion of four existing compartment mills into tube mills for closed circuit operation with mechanical air separators. The compartment mills formerly had been closed circuited with the same air separators for single-stage grinding.

The finish mill building adjoins a covered storage area of 100,000 bbl. clinker capacity. Neither of these structures as such was changed in the rebuilding program. Clinker and gypsum proportioning bins inside the storage area are filled by a 3-cu. yd. P & H overhead crane traveling on an 80-ft. span. Proportioning feeders deliver to a drag conveyor which transfers to a 154 t.p.h. bucket elevator. Overhead, a drag conveyor fills two Bradley Hercules mill feed bins. Feed into the mills is regulated by Link-Belt 18-in. x 11-ft. reciprocating feeders which have a capacity range of 20 - 40 t.p.h. The mills are driven at 400 r.p.m. by 350-hp. synchronous motors through flexible couplings.

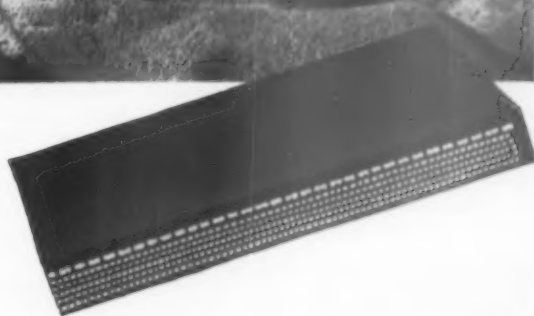
Product of these mills is delivered by screw conveyor to a 500 bbl. per hr. bucket elevator delivering to an overhead screw conveyor which fills four tube mill feed bins. There are two 7- x 24-ft. finish mills and two are 7- x 26-ft., each driven by a 500-h.p. motor. They are fed by Fuller roll

# Quaker



**Takes the impact and  
roughest abrasion of  
sharp, jagged loads**

*Your Quaker or Quaker Pioneer distributor can supply not only your standard needs—but also your highly specialized ones. You'll find him a prompt dependable money-saving source for everything you need in rubber products. Write for free brochure and name of your nearest distributor.*

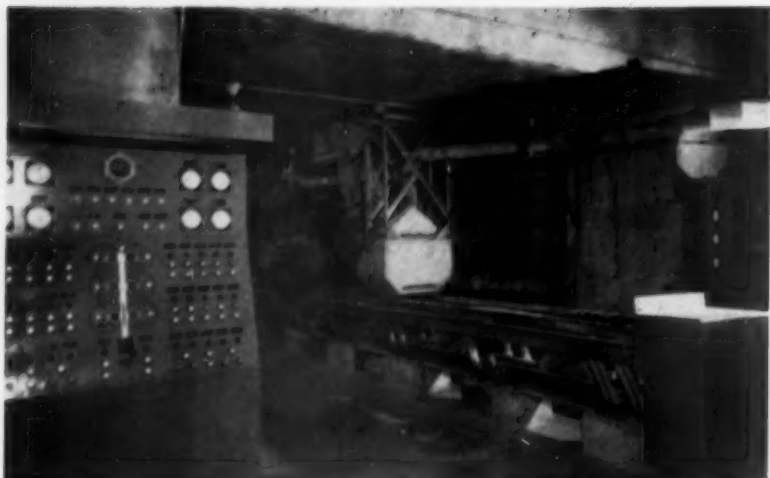


No matter what you consider most important in a conveyor belt, there is a Quaker-Quaker Pioneer belt constructed to meet your need. This one, for instance, is especially made for tough shock resistance. Highly flexible, it is strong cotton duck, with average cover tensile strength 2500 to 3000 lbs. Skim coat between plies. For jobs requiring even greater troughability, tension resistance and flexing, Quaker can supply belts of new high tensile strength rayon or cotton-nylon fabrics of any desired cover thickness. Complete line offers industrial rubber products including hose, packing and moulded rubber for every use.

40 ENOCHIAN  
**HKP**  
H. K. PORTER COMPANY, INC.

**H. K. PORTER COMPANY, INC.  
QUAKER RUBBER DIVISION**

**Philadelphia 24, Pa.  
QUAKER PIONEER RUBBER DIVISION  
San Francisco 7, California**



This view in row grinding department shows vibrating conveyor delivering to bucket elevator, right, for elevation to mechanical air separator. The feeders shown are from limestone bin (to the rear) and clay bin (in front, not in use). Note schematic board with lights on panel showing whether or not separate blending silos are full

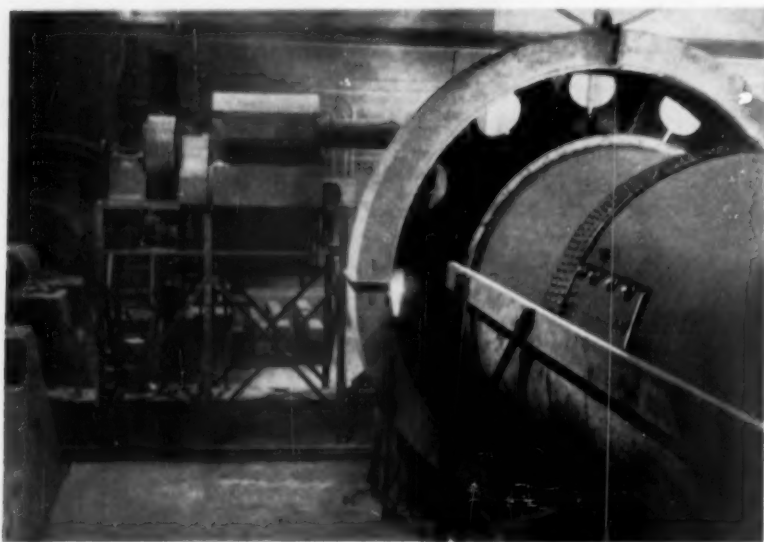
feeders and discharge to a common 20-in. screw conveyor, transferring into a cross screw conveyor which delivers into a 160 t.p.h. bucket elevator. Overhead, a single 20-in. screw conveyor distributes the stream into four 14-ft. Gayco mechanical air separators arranged in a row. Three separators are supplied through Fuller roll feeders and the fourth, at the far end, is supplied directly from the screw conveyor.

Finished cement is conveyed by 16-in. screw conveyor into the feed hoppers of either of two 8-in. F-K pumps for transport into the cement silos. Rejects are returned by a 16-in. screw conveyor into a cross screw conveyor delivering into the bucket elevator carrying the preliminary mill

product overhead into the tube mill feed bins.

The Hercules mills are producing 170 bbl./hr. each of a product pulverized to about 700 cm<sup>2</sup>/gm. surface area. Output of the finish mills is averaging 65 bbl. per hr. each of standard portland cement. It is expected that output will increase to 70 or 75 bbl. per hr. when rebuilding of this department is finished. These mills were producing 41 bbl. per hr. as single-stage grinding units.

Dust is alleviated in the finish mill by five Turner & Hawes Aeroturn dust collectors, which vent the screw conveyors at locations as shown on the schematic flow chart. These collectors range in capacity from 2400 to 7200 c.f.m. and return dust into process.



One of the finish mills with dust collector serving screw conveyor below which carries the product from four mills in a row. Five dust collectors of this type are used in finish grinding department

Storage capacity for cement had been increased progressively over the years and now totals 193,000 bbl. There are nine 13,000 bbl. silos, six 6800 bbl. units, four of 5800 bbl. capacity and four of 3000 bbl. capacity.

This plant produces types I, II and III portland cements with and without air-entrainment. All production, of both bulk and sacked cement, is shipped by rail largely into New England, New Jersey and New York State.

Until 1947, shipments were also made by water into New York City and for export, but water shipments were abandoned for economic reasons. In its early history, the mill supplied considerable of the cement for such famous construction projects as the Catskill Aqueduct and the New York Barge Canal.

One of the reasons for installation of the Cottrell electrical precipitator, was to supply soluble potash fertilizer during World War I when exports of potash from Germany to this country were stopped. The Catskill plant is generally credited with being the first mill to install a successful waste-heat power operation.

Rebuilding of the plant under the recent program was according to the basic design of Alpha operating officials and the engineering department under the general direction of Howard Hanks, vice-president of operations, and assistant to the vice-president of operations, D. C. Coulson. Construction engineer V. W. Anckaitis was in charge of field operations at the site. MacDonald Engineering Co. was the general contractor for all the construction and performed the necessary detail engineering.

Much of the equipment was standardized such as Westinghouse motors and G. E. switchgear and substations throughout the plant. Certain major equipment was selected to be identical with that in the company's Jamesville, N. Y., plant for interchangeability in case of emergency.

Alpha Portland Cement Co. has its headquarters at Easton, Penn., and its mills are located at Jamesville and Cementon, N. Y.; Martins Creek, Penn.; Manheim, W. Va.; LaSalle, Ill.; Iron-ton, Ohio; St. Louis, Mo.; and Birmingham, Ala.

Principal officers of the company are J. F. Magee, president; H. Hanks, vice-president of operations; R. S. Gerstell, executive vice-president of sales; N. O. Wagner, vice-president, sales; J. D. McKelvy, vice-president; and K. T. Wright, secretary-treasurer.

D. C. Coulson is assistant to the vice-president of operations; V. W. Anckaitis, construction engineer; E. F. Brownstead, general superintendent; D. L. Ziegler, eastern division super-



intendent; and L. T. Brownmiller is chief chemist.

R. T. Recknagel is superintendent of the Catskill plant; J. H. Compton is assistant superintendent. Harold Stewart, plant chemist, and William Ward is plant engineer.

## TECHNICAL TRENDS

(Continued from page 85)

United States who operate a total of 45 calcining and wallboard plants. Five of these ten operators might be called "The Big Five." Calcining and plaster mills without wallboard production facilities are becoming a rarity. Every wallboard and gypsum company in the United States, with one exception, sell other materials besides gypsum products, and these products are mainly items used by the building industry. The one exception is the new operation in Phoenix, Ariz. It stands alone on the merits of gypsum and its products.

The field appears to be profitable but newcomers should be prepared to manufacture their own paper, for the cover paper used is becoming scarcer each year. They should also be prepared to manufacture their own retarder and, above all, stand with the leaders; expanding as needed, bring out new products and have a widespread and vigorous sales organization.

Gypsum is  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ , and the sulphate radical is a potential source of sulphuric acid. This acid is the basis of most of our chemical industries, and during the last World War sulphuric acid was in short supply due mainly to shortages of elemental sulphur and sulphide ores — the two main sources of raw material. The Germans were reported to have used gypsum as a source of sulphur and at the moment in England one company is producing sulphuric acid from anhydrite (dehydrated gypsum) and the residue is lime. This company is making portland cement from the residue after removal of the sulphur component. The time may not be far away when our resources of elemental sulphur will be gone as well as cheap sulphides, so gypsum may have an important future. Utah alone is said to have 10 billion tons of the mineral. Nevada, California, New York, Texas, Iowa and Kansas have important deposits. Some gypsum is in Arizona and if one wants to go underground for it, there is said to be large reserves in that state as well as in Texas and Louisiana. So our national economy is not in jeopardy as regards basic acid supplies.

One of the companies in the West now building two new calcining and wallboard plants, will use a calcine-



Factory precast, prestressed structural members, made by Geo. Rackle & Sons, Houston, Texas, being placed in position

while-they-grind calcining system. The stucco will be for wallboard and gypsum lath purposes as it is not the intent to go into the sacked gypsum trade. Heavy-media separation may also play a part in upgrading raw rock as is now done by one company in Ohio. At one of the newer plants in the central states, a new calcining system went into service. It replaces the conventional kettle or batch system, or, rotary kilns. The new system is a continuous process that indicates possibilities of better control over the products desired.

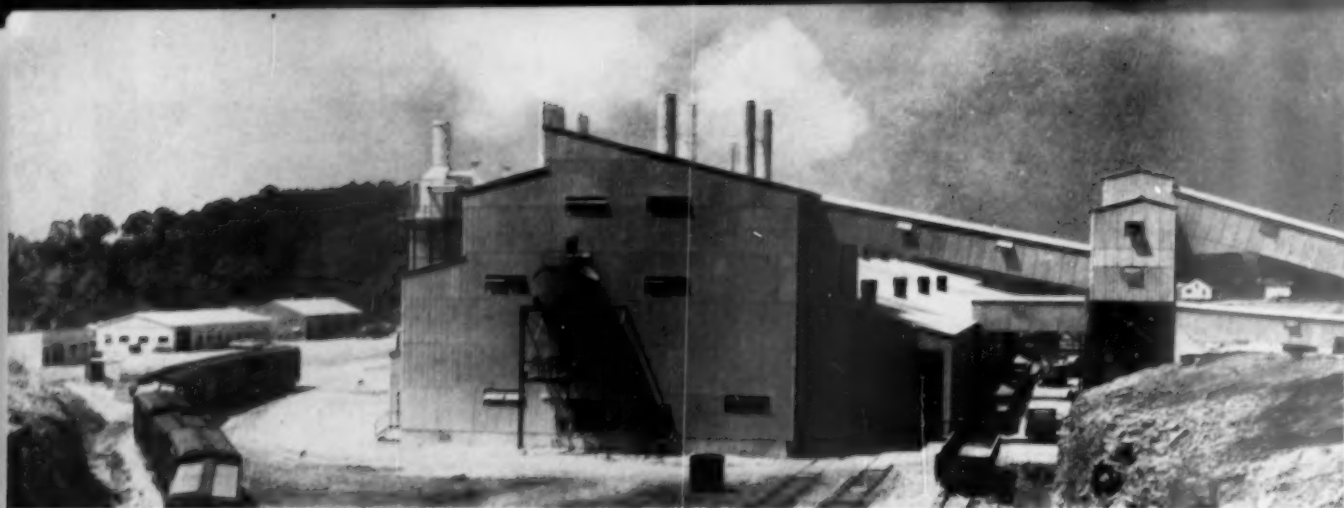
### Lightweight Aggregates

Considerable interest is still being displayed in new sources of artificial lightweight aggregates. A new operation between Bakersfield and Los Angeles is reported to be in production and other companies are seriously investigating the possibilities. One plant in Kentucky that started operations last year added a second kiln, and a Ohio producer that got off to a slow start is reported to be making satisfactory progress. South and North Dakota are reported to now have four plants similar to the one at Rapid City, S. D. This plant is small with a low capital investment and is an example of what can be done in limited marketing areas. Some of the newer plants started in the past few years appeared to have had some early troubles selling their products but by consistent and effective promotional work have solved this problem. Fortunately, most had substantial backing and were able to stand the costly pioneering work.

Near the Pacific Coast, in Oregon, is a sand operation of interest as it might show what could transpire in sand treatment at a commercial plant if the sand had other than value as an aggregate. A new plant there involving upwards of a million or more of invested capital will strip, mine and truck-haul the sand to the plant. The sand is then sent over spiral concentrators and a "heavy" obtained. This black sand will be dried and sent over magnetic concentrators. The magnetic portion is then sent into a specially designed roaster resembling the Fluo-Solids calciner. Roasting the concentrate under reducing conditions makes a product from which iron can be removed by dissolving it in dilute sulphuric acid, leaving a relatively high grade chromite concentrate which is the main ingredient sought. Some gold, platinum and other metals will also be recovered in minor amounts. Liquid cyclones of the two-stage type also play a part in the processing. Chromite ores are much used in the rock products industries in making fire-resistant brick.

### Cement Earnings

CALAVERAS CEMENT CO., San Francisco, Calif., reported net earnings of \$1,173,184 for the first nine months of 1955, as compared to \$728,482 during the comparable period of a year ago—an increase of 61 percent. On a per share basis, the earnings equalled \$3.10 for the first nine months as against \$1.92 in 1954. Net sales for the 1955 period were \$8,188,930 as against \$6,656,600 in 1954.



Fine grinding and calcining departments are in the building in the foreground

## Southern Indiana's Newest Gypsum Plant

**T**HE FIRST GYPSUM MINE AND PROCESSING PLANT in Indiana recently went into operation near Shoals in Martin County in the south-central part of the state. Shoals is about 50 miles north of the Indiana-Kentucky state line and some 25 miles south of Bedford. The new mine and plant is on U. S. Highway 50 and is strategically located to serve important towns and cities within a radius of 200 miles.

National Gypsum Co.'s newest plant was formally dedicated September 21. It embodies advanced engineering principles learned and tested in the design and operation of 35 other National Gypsum Co. plants during the past 30 years. The new plant, built at a cost of \$9,000,000, was in full operation in less than a year after ground was broken.

Dedication observances started with an hour-long parade in the town of

### UNUSUAL FEATURES

... of the new Shoals, Ind. plant of National Gypsum Co. include interesting mining operation, accurate and sensitive wallboard machine controls, continuous calcining process

Shoals at noon on September 21 and included a two-day open house at the plant and a banquet in St. John's Hall in neighboring Loogootee the night of September 21 for visiting officials and engineers. About 7000 people attended the two-day opening ceremonies.

Speakers at the parade reviewing stand in Shoals included: Lt. Governor Harold Handley of Indiana; Melvin H. Baker, chairman of the board of National Gypsum, and Indiana Congressmen Earl Wilson and William G. Bray. Chairman Baker was the principal speaker at the banquet.

Exploratory boring, starting in 1951

at a cost of more than \$350,000, outlined the location of a deposit of commercially pure gypsum. Core drilling was undertaken after company geologists and Indiana State University staff geologists had observed that earlier oil exploration reports indicated the existence of gypsum deposits in Indiana at a considerable depth. On the basis of findings after the core drilling, National Gypsum directors authorized mining operations and the construction of modern plant to manufacture wallboard, sheathing, lath and plaster.

The task of sinking an inclined



Aerial view of gypsum mill and wallboard plant with stockpile to the right



One of approximately 1200 on the Minnesota Iron Ranges, this 34-ton "Euc" is loaded by a 5 cu. yd. shovel at a large open pit operation. Rear-Dump models are available with semi-rigid or spring mounted axles, Allison Torqmatic drives and transmissions, or conventional 5 and 10 speed transmissions.

## More Profit with "Eucs" in Mines and Quarries

■ Built for tough off-the-highway service, Rear-Dump and Bottom-Dump "Eucs" and Euclid Scrapers are cutting the cost of moving ore and overburden, sand and gravel, and stone on quarry and mining operations. Big payload capacity, fast travel speed and high job availability add up to more loads per hour and lower cost per ton or yard hauled.

■ Your Euclid Distributor will provide a hauling production and cost estimate for your operation . . . there's no obligation so get in touch with him soon. Have him show you how Euclid equipment can improve your profit picture.

**EUCLID DIVISION**  
GENERAL MOTORS CORPORATION  
Cleveland 17, Ohio



This Bottom-Dump "Euc" is being loaded with 17 cu. yds. of sand and gravel from an overhead hopper for haul to the washing plant. Owner is Interstate Sand and Gravel of Covington, Ohio.



Ideal Cement Co. of Portland, Colorado uses 22-ton Rear-Dumps with quarry bodies to haul stone from the face to the crusher. Top speed of this Model 36 TD, with full payload, is 32.5 m.p.h. Spring mounted drive axle and Allison Torqmatic drive and transmission are important factors in stepping up production and profits at this quarry operation.



Euclid Twin-Power Scraper stripping overburden at a large gypsum quarry in Iowa. Powered by two 190 or 200 h.p. engines with torque converters and semi-automatic transmissions, this "Euc" self loads, has a struck capacity of 18 cu. yds. and travels up to 30 m.p.h. with full payload.



# Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE





shaft was begun in July, 1954. At the same time grading was started for the mill buildings. The slanting mine shaft, the longest in the gypsum industry, is in effect a wide underground roadway. It provides ample parallel space for large ventilating ducts, a water line, a belt conveyor and a walkway for emergency use.

Thirty to 35 cars of finished products are being shipped from the plant each day. Company officials point out that the operation of the new plant insures faster delivery and lower freight charges to dealers and contractors all over Indiana. The plant also provides employment for some 200 men, creating a weekly payroll of around \$15,000 or more than \$750,000 annually in addition to local expenditures for fuel, power and transportation of around \$12,000 a day.

#### Dedication Ceremonies

Chairman of the board, Melvin H. Baker and several members of his official family flew by private plane from the company's Buffalo, N. Y., headquarters to the Bedford, Ind., airport to attend the September dedication.

Following the parade and brief ceremonies at a reviewing stand in Shoals on Wednesday, September 21, the new plant was opened to visitors. More than 5000 people from Shoals, Loogootee and neighboring towns visited the plant the first day and an additional 2000 the next day. Guides conducted groups through various departments. A large tent sheltered an elaborate exhibit telling "The Story of Gypsum."

A supervised play area arranged for children of the visitors containing a miniature streamlined train, carrying a dozen children at a time, a merry-go-round and other amusement devices, was a feature of the opening dedication.



R. E. Scifres, plant manager

The actual dedication ceremony at the plant was concluded by a flag raising conducted by American Legion squads from Shoals and Loogootee.

Sanford Deckard, Sr., editor of the Shoals News and Loogootee Tribune, was master of ceremonies at the banquet in the evening in St. John's Hall in Loogootee. Chairman of the board, Melvin H. Baker, the featured speaker, described the events leading up to the discovery of gypsum in Martin County. "The stream of gypsum now flowing out of these hills is not the product of a lucky strike," he said. "Finding this great gypsum deposit is the direct result of long-time compilation of data by your State Geological Survey in cooperation with our own geologists and mining engineers."

"As long ago as 1948, we asked Charles F. Deiss of Indiana University if gypsum were to be found in Indiana. From data on oil well drillings, John B. Patton, the principal geologist, deduced that gypsum might be found in this area. We are happy to have both these gentlemen with us tonight."

"After extensive surveys, our geolo-

gists defined the area to be explored and this was followed with core drilling. By the end of 1953 several hundred holes had been put down covering a wide area. Some of these went down as much as 700 ft. and many of them were blanks. Finally the deposit was picked up in abundance, extending out from where the mine is now located."

"Then there remained a major piece of engineering to accomplish — not only to tunnel an opening down 500-ft. to the gypsum, but to excavate for a plant site. This in addition to putting down railroad tracks and finding water all called for heavy outlay of capital."

"Prior to this time, gypsum had never been found in Indiana and you will understand our gamble when I say we spent around \$350,000 in our efforts to find it. From the company's standpoint, the development of this new operation will mean better service to our Midwestern customers. It will mean lower freight costs, quicker and more reliable deliveries. And, for the community, it will mean new jobs and new wealth for your people."

"Our engineers have spared nothing to make this our most modern operation. The fact that we invested upwards of nine million dollars may indicate we expect to be here a long time."

Chairman Baker was optimistic about the future in the building industry and predicted that "This year will be the biggest year ever in terms of wages and productivity."

"Our plans to put another \$75,000,000 into new plants and products," he said, "will best indicate what we think of the future. With the international picture looking brighter than it has for many a year, and with our national economy booming along at an unprecedented rate, we are confident that America is entering a new



**Plant officials and supervisory personnel.** Left to right, front row: M. W. Abram, mine superintendent; W. H. Bryant, sales supervisor for Shoals plant; Rod Stiling, board machine foreman; Hill Smith, board machine foreman; Robert E. Scifres, manager; Lester Radcliff, construction; Richard Whitcomb, warehouse superintendent; and Richard M. Harris, quality control supervisor. Back row, left to right: Harry H. Scheu, Jr., office manager; Al Wehrsdorfer, board machine foreman; Lyle M. Olsen, board mill superintendent; Gordon Beeman, master mechanic; Leland Laybourne, mill superintendent; Tom George, mill foreman; and Chas. E. Gouyd, safety and personnel





**Roof bolting** helps prevent rock falls; timbers are not used



**Jumbo drills**, electric-motor driven, drill 1 3/4-in. holes

era of prosperity and growth."

Mr. Baker pointed to the steady population shift to the suburbs as reflecting a change in living habits. "New facilities must be provided for highways, streets and other utilities," he said. "Pressures will continue for suburban shopping centers, more schools, churches, recreation and, in fact, all the facilities necessary to provide for large suburban communities."

Thursday, September 22 was observed as "Customers' Day." Gold Bond dealers, about 2000 in all, from Indianapolis, Chicago, Cincinnati, St. Louis, Atlanta and Birmingham districts were present and the operations of the new plant were explained to them by the members of the staff, who did an outstanding job for their company.

Of a total of 2700 acres of gypsum bearing ground at this southern Indiana operation, some 40 acres has been set aside for the surface plants relating to the mine, the main processing plant and related structures. The buildings cover four acres of this area with a high industrial steel wire fence enclosing about six acres of the plant and office site. A modern office is provided for the operating and auditing personnel with a separate structure for the safety personnel director. The Pinkerton Detective Agency maintains a watchman at the main plant gate on a 24-hr. basis.

#### **Mining Operation**

The gypsum deposit at Shoals, which is about 500 ft. in vertical depth underground, is in a flat bed ranging from 14 to 17 ft. in thickness. It is a high grade gypsum material, pure white in color and quite hard. The hanging wall and the foot wall are both limestone with no "freezing" of

the gypsum to the limestone. The old axiom among gypsum miners, "The harder the rock, the harder, stronger, and more durable are the products made from that rock," seems to hold good for the southern Indiana deposit. And, the pure white color always implies purity, so a second gypsum miner axiom seems to be satisfied.

An inclined shaft 25 ft. wide and about 12 ft. high connects the surface workings with the mine. Recovery of rock is by the room-and-pillar system. Main haulage drifts and cross-cuts are 50 ft. wide with "cut-throughs" that are 30 ft. wide. The mine itself is practically bone dry but a little water, about 10 g.p.m., is found in the incline. The general lay-out of the underground workings includes an underground machine shop and repair facilities, a power sub-station, mine superintendent's office and suitable adits for ventilation. A 6-ft. fan is provided for ventilation purposes. All

diesel-driven equipment in the mine is provided with adequate scrubbers so that exhaust gases contain no noxious vapors.

Primary drilling is done with two jumbos with two drills per machine.

Primary loading is done with two diesel-driven scoop-type loaders. A Traxcavator is also available for primary loading and for clean-up work.

A fleet of three tractors pulls 10-ton wagons.

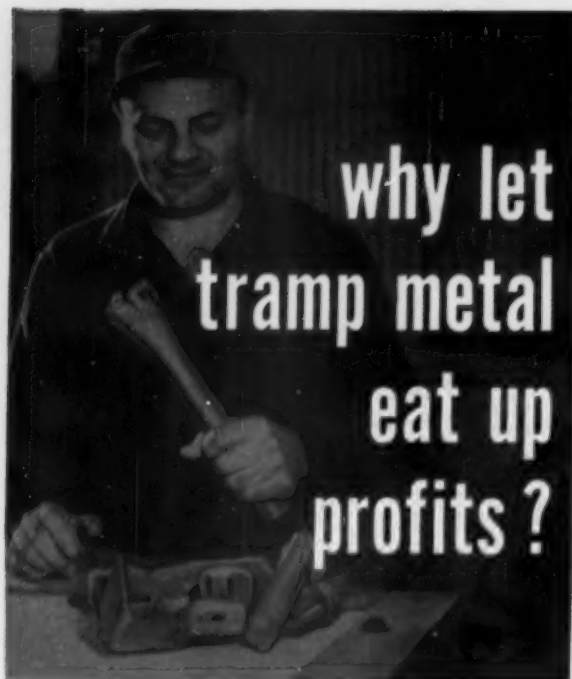
No supports for the backs (roof) are needed aside from the pillars that are left, although some roof bolting is done. In questionable locations vertical holes are drilled into the roof after which steel bolts are grouted in.

Primary drilling is not a particular problem. The rock tends to break blocky but still the material, for the most part, is small enough to drop into the single roll slugger-type, roll primary crusher. A heavy duty apron

*(Continued on page 112)*



**Front-end loaders** dumping blasted gypsum rock to haulage unit which carries it to primary crusher located on the mine floor



Assortment of tramp metal detected at Lithium Mine of Foote Mineral Co.

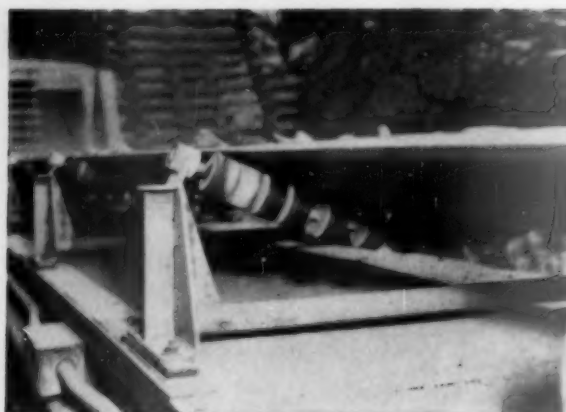
Tramp metal, such as manganese steel dipper teeth, drill bits, castings, broken parts that cause damage to hammermills, pump liners and sizing screens, can be automatically detected by the RCA Metal Detector. Installed on your conveyor, it's always on the job, electronically probing out all kinds of tramp metal, both magnetic and non-magnetic. Wired to sound an alarm, spray-mark the metal area or stop the conveyor when trouble threatens, it prevents downtime and repairs from eating up profits, quickly pays for itself. Why not let us make a survey of your plant? Use coupon.



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## NEW CONVEYOR BELT IDLER

**Handles sticky, abrasive, dusty, or corrosive materials.**

**Has only two bearings—up out of the dirt.**

A 2-bearing, cable suspension idler that resists dust, abrasion, corrosion and material buildup is proving itself superior for bulk handling in many industries.

Called the Limberoller, it has already given *10 times* the service life of replaced steel idlers in handling abrasive foundry sands, coal, petroleum coke, potash, copper ores, copper mill tailings, iron ore, wet concrete, triple super phosphate, ammonium sulphate, and sticky fertilizers.

Pressure-molded neoprene or rubber discs on a flexible steel cable conform to load and cushion the belt, help keep belt aligned, and are self-cleaning. The two bearings are up out of the dirt zone; have had no design failures.

Unaffected by most corrosives that damage steel, the new idler is ideal for chemical, sulphur and salt plants; corrosive and high ozone atmospheres. It is more abrasive-resistant than steel and flexes out of the way of abrasive materials.

The Limberoller weighs  $\frac{2}{3}$  less than a conventional steel idler; is locked by a simple cotter key into special lightweight stands for easy installation and removal. No cover sheets are needed. Two types of stands are available: one that bolts to conventional rigid sections; and a self-supporting type that forms its own easily-erected portable sections without bolts, by using special stiffening rails.

Because of these unique features, many companies have adopted Limberollers as standard for all belt conveyor operations. Details from Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa. Request Bulletin 30-27.

# EATON FEATURES

## reduce hauling costs, keep trucks on the job



### PLANETARY GEAR DESIGN —

distributes pressure and wear over four planetary gears, resulting in lower unit stress, reduced maintenance, longer axle life.

### FORCED-FLOW LUBRICATING SYSTEM —

supplies positive lubrication to all moving axle parts, even at slowest vehicle speeds.

### POSITIVE SHIFT CONTROL —

provides quick, easy shifts. Drivers use available gear ratios—the right ratio for road and load conditions.

### SELF-CONTAINED AIR BRAKE —

provides for greater braking efficiency; quicker action, quicker release; quick, easy reline. Available on Eaton air brake models.

### EXTRA-RUGGED CONSTRUCTION —

eliminates the possibility of harmful distortion or misalignment under full load, holds maintenance to a minimum.



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## 2-SPEED

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**PRODUCTS:** Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater Defroster Units • Snap Rings • Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers



Gypsum rock in excess of immediate plant requirements is ground stored and reclaimed by a tunnel belt conveyor. Haulage unit is similar to one used in mine

feeder feeds the primary crusher. The inclined mine shaft extends well below the gypsum bed and a 30-in. belt conveyor operates in this incline extending from near the toe of the shaft to the surface. The primary crusher has been installed above the toe of this long belt conveyor so that the wagons dump direct to the apron feeder ahead of the slugger roll. Crushed rock from the primary crusher falls to a short feeder belt serving the long inclined belt conveyor. The mine, at the time of inspection, was producing about 1250 tons of rock per 8 hr. on a one-shift basis.

The 30-in. inclined belt conveyor from the underground primary crusher is designed to carry minus 4-in. rock. Over the longer belt conveyor is suspended a stationary type magnet to remove any tramp iron before sending the rock to the two secondary crushers. The main belt conveyor operates in an enclosed passageway along one of the inclined shaft walls. The gallery is 8 ft. wide and the height of the inclined shaft is about 12 ft. The

mine belt conveyor is 2052 ft., 8¼-in., center to center. Paralleling the mine belt conveyor in the inclined shaft is a passageway 14 ft. wide that is provided with standard gauge car tracks on which is operated an enclosed man-car, holding 16 men, to which the hoist cable is attached by a suitable bridle. The man-car weighs 5050 lb. Immediately below the man-car is a flat car for handling supplies which also acts as a brake-car. This car will handle 11-ton loads and weighs 7400 lb. It can operate independent of the man car if desired. The control system provides safety devices and other protective measures to prevent over-winding and other hazards usually associated with shaft work. The mine belt conveyor on reaching the surface continues in an enclosed gallery to the secondary crushing and screening house.

#### Crushing and Grinding

There are a total of 15 belt conveyors to handle the rock ahead of the grinding mills. All but the first two, previously mentioned in connec-

tion with the mine, are 24 in. wide. Belt conveyors carrying the smaller sizes of crushed gypsum have the higher f.p.m. speeds. About two miles of belt are involved.

The transfer house is a substantial, multi-storied building designed for a rather intricate transportation system for crushed (and intermediate crushed) materials through adequate by-passes and chutes.

The belt conveyor serving the outside storage pile is in an enclosed conveyor gallery and fingers out over the cone-shaped pile, and the gallery is without end supports. The storage pile is designed for a height of 85 ft. and 131 ft. in diameter at the base. However, tractor and dozers can push material to one side increasing the tonnage in the pile-up to a reasonable figure. A cubic foot of the crude weighs about 90 lb. All rock going to the grinding section need not necessarily go through this storage pile as provisions are made to by-pass direct the plant's nominal requirements and to stockpile only the excess. The storage pile is not enclosed.

#### Milling and Packing

In the finished stucco section of the plant, screw conveyors, bucket elevators and drag chains are used for conveying the various stucco and intermediate products. The tube mill feed bin has a capacity of 166 tons and under it is a drag chain feeder that delivers to a smaller tube mill feed bin. Tube milling of stucco for the plaster trade adds to the material's plasticity and increases its sand-carrying capacity.

A bucket elevator and screw conveyor system picks up the tubed stucco for delivery to two steel bins. Provisions are made to by-pass the tube mill if desired. Under these two bins are drag chains rated at 24 t.p.h. which deliver stucco by a system of screw conveyors and bucket elevators to parabolic steel bins over the packers. The steel bins are parabolic in end section and are divided into three compartments.

The weighing hoppers and mixers contrast with the more conventional units that are usually one-ton capacity. The mixers each serve a steel hopper over two, four-tubed packers. At the stucco weighing hoppers (over the mixers) several devices are incorporated in the design to insure high and uniform quality of the Gold Bond sacked plasters. When retarder is to be added to the batch of stucco, provisions have been made to assure that the retarder be in the matrix before the material is dumped to the mixer. The weighing hopper cannot be dumped until the outlet gate to the mixer is



Charles E. Gouyd, personnel supervisor, walking up 2000-ft. sloping mine shaft



closed. Otherwise the retarder and stucco could go direct to the packers and not be properly mixed. These safety features were perfected by the engineering staffs of the National Gypsum Co. Screw conveyors under the packers pick up spillage and return the material to the mixer by means of a small bucket elevator.

Each of the stucco weighing hoppers is provided with a dial scale. Retarder is manufactured at another plant of the National Gypsum Co. Lack of uniformity of purchased retarders from outside sources is one reason for the company manufacturing its own retarder, and is another instance of why the plaster has a high rating in the plaster trade. Sacked products in multi-walled paper bags are hand trucked into cars near the packers.

### Stucco Blending

A system of screw conveyors and bucket elevators deliver un-tubed stucco to two steel silos serving the wall-board plant. Material from these two bins enters the blending system via a bucket elevator. Proportioning of stucco to the pin mixer is on a volumetric basis. At the discharge of the above mentioned bucket elevator is another screen to remove tramp material after which the stuccos are sent to a screw conveyor about 60-ft.

As a filler and to lighten the weight and to insure added insulation properties, waste paper is disintegrated in a specially designed beater. This is a tank containing the disintegrating mechanism. It is located at floor elevation and is about 10 ft. high and 10 ft. in diameter. Old newspapers, waste paper, paper bags and similar items are fed to an inclined belt and the material delivered to the top of the beater.

### Wallboard Manufacture

The wallboard machine uses a pin mixer to which has been added some refinements by the staff of the National Gypsum Co. The forming rolls have safety devices that function should a piece of foreign material get into them. Ahead of the knife is a punch designed by National Gypsum Co. Wallboard and lath are both made on the same machine but at different times.

The boards then are transferred by an automatic tippie to one of the eight decks of the dryer. Drying time depends on the thickness of the board but passage through the dryer is accomplished in about one hour.

At a point just beyond the knife, a "take-off" belt is provided so that the wallboard inspector can remove a sheet for weighing and inspection. This same take-off belt is used to by-

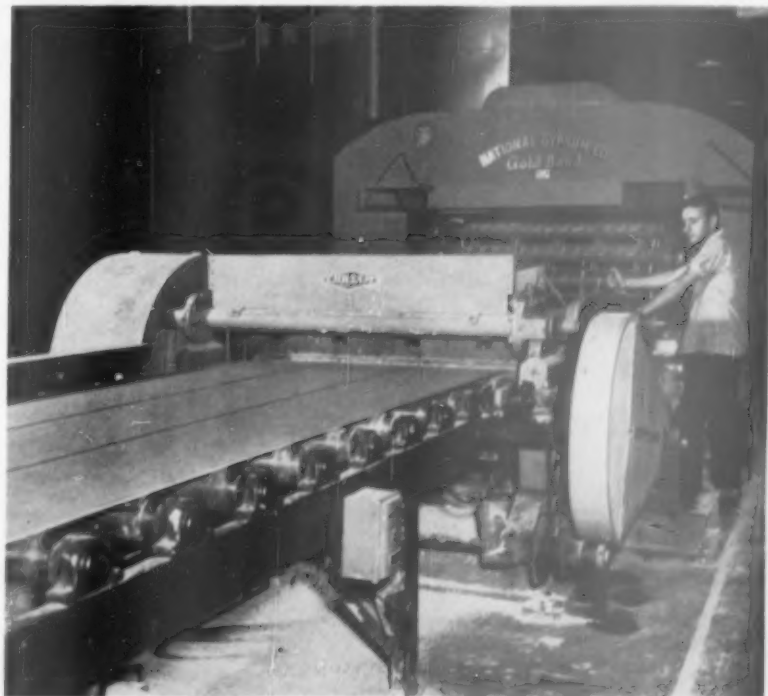


Two fine grinding mills. Each mill is provided with a vent and an exhaust fan

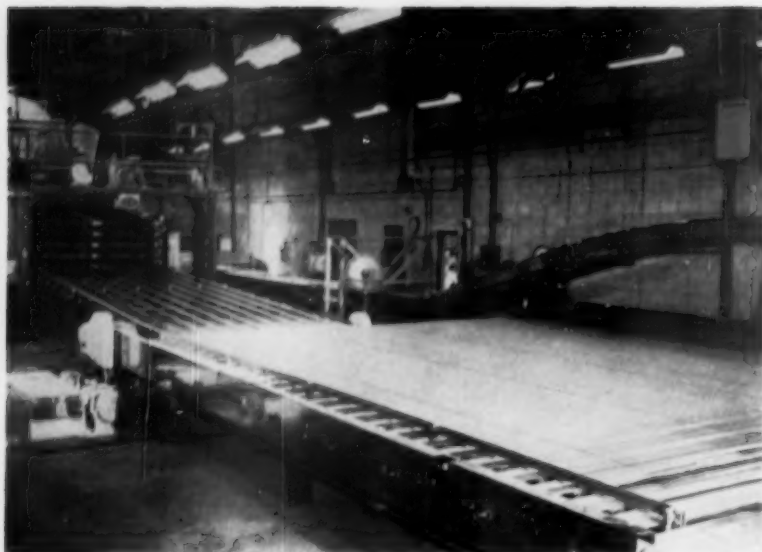
pass any board or lath that is not up to grade. The take-off belt in this case carries the defective board to a point outside the building for disposal. Before entering the bundling section, dry boards can likewise be removed and weighed and given other inspections. A moisture indicator is available by means of which the inspector can accurately gauge the water content of the board. The inspector places the

device on the board and a gauge almost instantly gives a calibrated reading. The dryer section has its own control panels as well as recording thermometers for each heat zone. Combustion safeguards are also provided so that fires cannot be lit unless the combustion chamber and ducts are free of explosive vapors.

After passing through the dryer and being inspected, the ends of the fin-



Automatic wallboard cut-off knife cuts board to predetermined lengths



Transfer table, in the foreground, and eight-deck wallboard dryer, to the left

ished board are accurately cut by enclosed circular saws to predetermined lengths. The boards then pass through a machine that puts a paper binding on the ends with a suitable adhesive. The binding carries the Gold Bond trade mark of the National Gypsum Co. The date of manufacture is also stenciled on the bundle at this time.

From the trimmer and bundling machine, the finished bundles are placed on "Levelators." This is a type of elevator to expedite the making of a large pallet of boards for handling by one of the fleet of fork lift units. Nine lift trucks are in service. At the start of a pallet of boards, the Levelator platform or deck is about waist high

and as each small bundle is placed on it the platform lowers about an inch. When the deck of the Levelator is at floor level the pallet is completed. There are two Levelators, one for the lath bundling section and one for the board section.

The plant produces wallboard in thicknesses of  $\frac{1}{2}$ -in. and  $\frac{3}{8}$ -in. with also some  $\frac{1}{4}$ -in. board. A Gold Bond "Fire Shield" board is also made that is  $\frac{3}{8}$ -in. thick. Punched gypsum lath is made on the wallboard machine in three parallel strips. The board is made in the standard modular lengths. The board width is 48 in.

A large amount of storage space has been provided in the new plant. One

section for board or lath has 19,600 sq. ft., and a second section has an additional 5280 sq. ft. for the same types of material. There is 2150 sq. ft. for specialty storage and 3560 sq. ft. for the plaster or sacked product storage. Large areas are also provided for waste paper storage, asphalt core storage, and bottom cover paper for the wallboard and lath production.

Over a considerable area of the storage section is a 40 ft., 5-ton capacity traveling electric crane along with adequate turntables for handling rolls of paper. Two types of paper are used for the board, a top or cover paper and the back or bottom paper. The storage and car loading facilities are so extensive that the loading foreman rides a bicycle to expedite his functions. Floors are kept clean with a power driven floor sweeper.

The Shoals plant is unique in that the calcining, raw grinding, mixing and sacking, wallboard, dryer, storage facilities and a two-track railroad loading spur are all under one huge building. The building is for the most part enclosed in corrugated asbestos siding. Steel and concrete are used throughout.

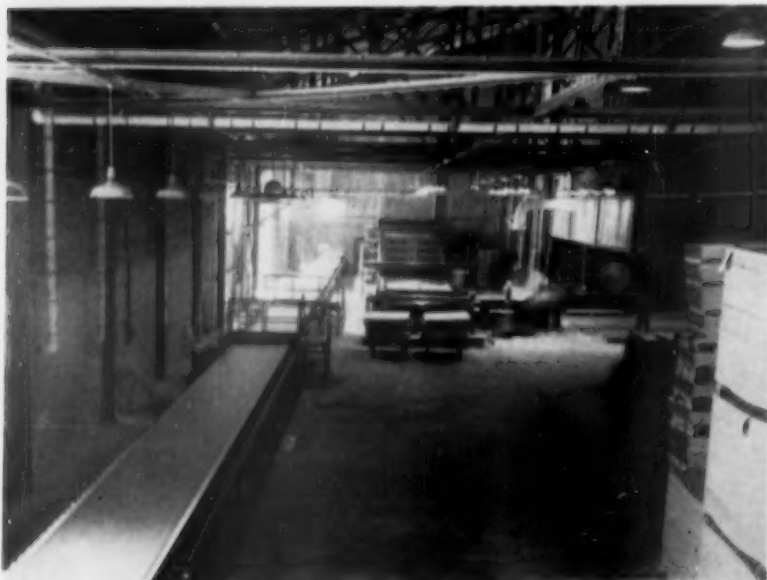
Change room facilities for the employees are provided at several points with first aid stations at several points. Plant offices are also provided in the main structure for the various plant department heads.

Control of the high standards set by the makers of Gold Bond plaster, gypsum wallboard, and lath, centers at a laboratory that is a part of the main structure. In this laboratory samples of the various gypsum products are subject to constant sampling and checking to insure a high quality product.

The Shoals plant is served by the Baltimore and Ohio Railroad and four railroad sidings serve the plant. One siding is for crushed gypsum for the portland cement market, one is for oil, coal and other supplies (mainly in-coming) and two tracks enter the main building. All Gold Bond gypsum plasters, wallboard, lath and specialties are loaded into cars spotted on these two inside, parallel tracks. Cars can be moved or spotted or shifted by a company-owned car mover. This machine is designed to travel on rubber when desired and can be set on the standard gauge trackage when cars are to be moved. It will shift or move seven loaded cars.

The new plant is similar to the one now under construction at New Orleans. Both were designed by the engineering staffs of the National Gypsum Co. The Shoals plant was built by Dickman-Pickens & Bond of Muskogee, Okla., and this company's Lit-

(Continued on page 118)

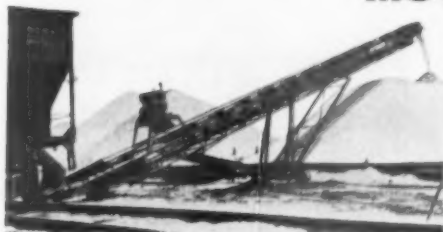


Wallboard machine with take-off end of dryer in background



Model 363 shown with car unloader. Lengths to 35 feet. Capacities to 200 tons per hour. Swivel wheels for radial stock piling. Wide range of accessories, including screens.

**MOVE** bulk materials the cheapest way.



Model 374 shown with flanged wheel for radial stock piling. Available with steel wheels or pneumatic tires. Lengths to 60 feet. Capacities to 430 tons per hour. Wide range of accessories, including vibrating screens.

**MOVE** sand, gravel, cement, wet concrete, coal, coke, ashes, chemicals — almost any bulk material.

**MOVE** with machines that are truly portable — easily moved around the yard, or towed on the highway.

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CONVEYORS

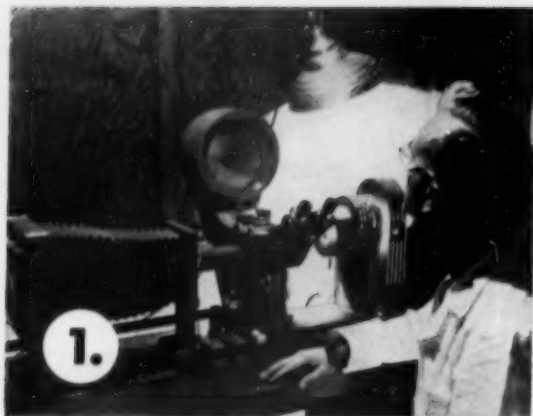
LOADERS

DITCHERS

ASPHALT PAVING EQUIPMENT

**B  
G**

# Tuffy® Tips



**1. Metallographic Examination.** Under powerful magnification, Union Wire metallurgists examine the microstructure of the steel in rods and wires to see that rigid specifications are met and maintained in processing.

**2. Chemical Analysis Laboratory.** Steel for Union Wire Rope is made to rigid specifications. Here rods and wire are chemically analyzed to make certain that the correct combinations of carbon, manganese, etc., are kept under control.



## Here Are Some Of The Steps Taken To Pre-Determine Tuffy Toughness And Assure Longer Rope Life

**3. Designed by Union Wire Rope Engineers.** This accelerated fatigue tester is equipped with sheaves from 8" to 24" permitting application of any bending stress. Tensile loads up to 12,000 lbs. are applied. Thus wire rope life under toughest fatigue conditions is pre-determined.

**4. Rope Testing Machine.** This 3-story high machine is designed to test and record the breaking strength of the rope when finished and ready for the customer.

**5. Static Flexibility Tester.** The demand of machinery engineers toward smaller sheaves and higher speed made it necessary for Union Wire Rope Engineers to adapt this standard machine in order to test static flexibility.

**6. Wire Tensile & Torsion Tester.** In tension and under torsion, this machine tests wires to see that they measure up to the extraordinary high level of strength and toughness mandatory in Union Wire Rope.

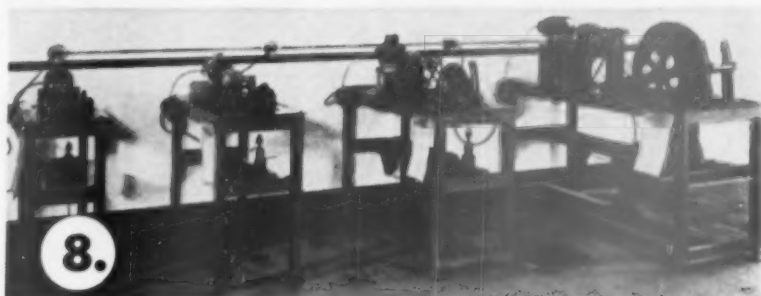
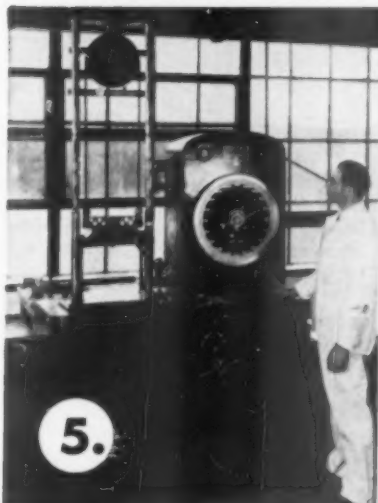
**7. Another View Of Accelerated Fatigue Tester.** Shows simultaneous testing of three different wire rope constructions. Here, in days, ropes are subjected to punishment equal to weeks or months of hard service.

**8. Wire Fatigue Testers.** The fatigue strength of wire rope is the sum total of the fatigue strength of the wires in its construction. Here, the wires in tension and bending are tested for fatigue strength.

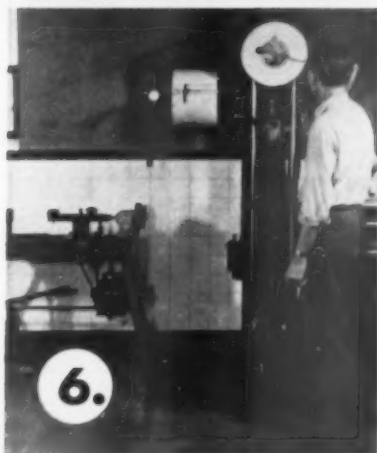




# How Research Puts Longer Service Life Into WIRE ROPE



When you specify one of the **Tuffy Wire Ropes**, you can say **Tuffy** and forget complicated specifications



## Tuffy Scraper Rope

It's flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Save wasting sound rope—mount a reel on your scraper.



## Tuffy Slings and Hoist Line

Tuffy Hoist Line, a longer running rope on all types of hoists. Slings of 9-part machine braided wire fabric. Kinking or knotting will not materially damage fabric.



## Tuffy Dragline

Constructed to give you maximum abrasive resistance with extra flexibility. Rides smoothly on grooves, hugs the drum when casting for full load.



## Tuffy Dozer Rope

Increases service life . . . reduces down-time. 150' reels mounted on your dozers let you cut-off worn sections without wasting good rope. 1/2" and 9/16" diameter.



## Your **Tuffy** Distributor Works For You

He's the man who can help you find a fast answer to all your wire rope problems. He's also the man who often knows as much about some requirements of your equipment as the men who made it. He's the man who's eager to supply the kind of service that will hold your patronage. Feel free to call on him anytime.

**union**  **Wire Rope corp.**

2156 Manchester Avenue Kansas City 26, Missouri  
Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand



Partial view of large storage facilities under one roof at Shoals plant

the Rock, Ark., office handled the Shoals job. The incline shaft at the mine was sunk by the Frazier-Davis Construction Co.

The Shoals plant is essentially a part of the expansion program now underway by National Gypsum Co., that includes a new wallboard and plaster mill now under construction in New Orleans and one at Burlington, N. J. Both of these plants will receive water-borne rock from the company's Canadian mines.

### Accident Statistics

FACTS AND FIGURES on all types of accidents are given in the 1955 edition of the National Safety Council's statistical yearbook, entitled "Accident Facts." Twenty pages deal with occupational accidents and the background necessary to give direction to an industrial safety program. A detailed list of accident rates by major industry groups is given, as well as charts showing the accident trend during the past 25 years. Most common sources of injuries, part of body most frequently injured, off-the-job accident problems, unsafe acts and conditions contributing to permanent injuries and deaths, and other topics are included. The 96-page book is available from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill., at a cost of 75¢ per copy and less for quantities.

### Geologic Report Re-Issued

CALIFORNIA DIVISION OF MINES, San Francisco, has reprinted its report on the mines and mineral resources of Los Angeles County (Volume 50, Nos. 3 and 4 of the California Journal of Mines and Geology, July-October, 1952). The bulletin also contains a report on the Cool-Cave Valley limestone deposits, El Dorado and Placer counties by Wm. B. Clark, and the an-

nual report of the State Mineralogist, Chief of the Division of Mines, by Olaf P. Jenkins. The report is well illustrated, containing several geologic and mineral industry maps.

### Ohio Fossils

THE OHIO DEPARTMENT OF NATURAL RESOURCES has published a book on Ohio Fossils, prepared as an introduction to the paleontology of Ohio and is designed for those who have never studied the subject before. The first three chapters serve as a background to the study of fossils, dealing with their nature, methods of collection, preparation, and study. Fossils are placed in their relationship to time, and plants and animals are classified with stress on those groups represented in Ohio's rocks.

The seven main chapters, 4 to 10, describe in non-technical language the more common fossils in the state. Line drawings and references are included. The 152-page book is available at \$0.97 per copy plus 3¢ tax for Ohio residents and can be obtained from the Ohio Division of Geological Survey, Room 106, Orton Hall, Ohio State University, Columbus 10, Ohio.

### Increases Expansion Program

BESSEMER LIMESTONE & CEMENT Co., Youngstown, Ohio, is increasing its \$3.6 million expansion program by an additional \$700,000, as announced recently by Frank B. Warren, president. The money will be used for construction of a building to house a new 10- x 31-ft. compartment mill. The mill will furnish increased cement finishing capacity to supplement equipment being installed in the original program. The overall program is expected to increase the company's total capacity by 50 percent. Expansion is scheduled for completion by June, in time for the 1956 construction season.

## FOND DU LAC STONE PLANT

(Continued from page 79)

returned from the scalping deck of the final 4- x 12- ft. three-deck vibrating screen.

A 24-in. belt conveyor, 135-ft. centers, equipped with a 20-ft. gravity belt tightener, carries material from the roll to the three-deck screen. Returning oversize to the roll is an 18-in. belt conveyor, 88-ft. centers. All belt conveyors are Pioneer Super Service type.

The Pioneer three-deck final screening and sizing unit produces five different sizes simultaneously. As many as seven different product sizes may be alternately obtained without changing screen mesh, the latter being accomplished by turning damper controls of the spouting arrangement. The three-deck screen is mounted by a secondary spring suspension feature which allows it to be placed high enough over the bins for "tricky spouting" without introducing harmful vibration to the entire structure. Arrangement of spouting and dampers to obtain various product sizes is shown in the accompanying sketch.

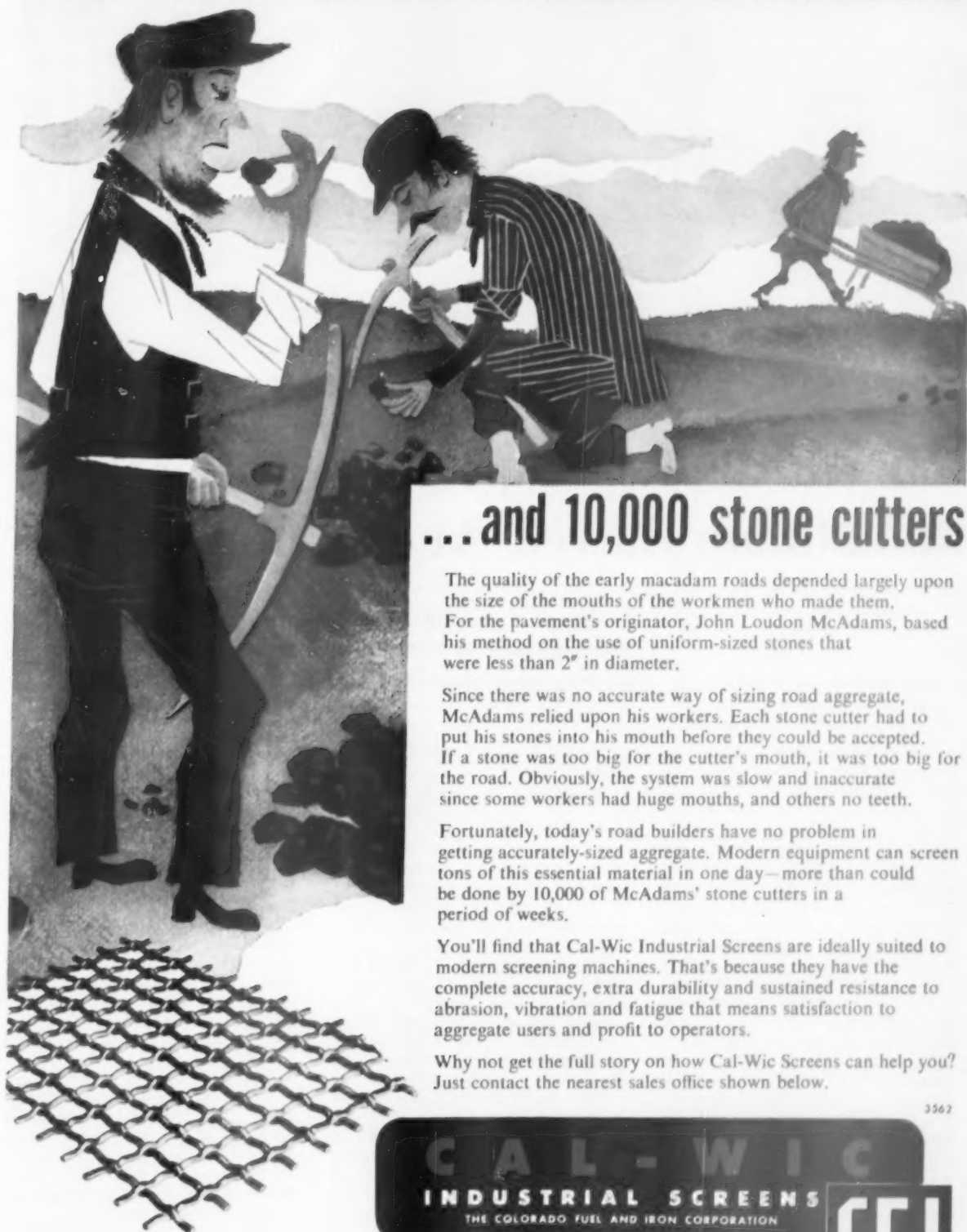
The four 21-cu. yd. Pioneer loading and blending bins provide further flexibility and efficiency in loading of trucks. In addition, the 18-in. channel frame horizontal reclaiming and blending conveyor, 55-ft. centers, on the bins may be used to load a blended product to the trucks or to draw off excess of any size.

The new plant is currently producing 110 to 130 t.p.h. of crushed and sized limestone for retail sale, according to Al Behnke, works manager. Sizes are 1½-in., ¾-in., ¾-in., and grade A agricultural limestone, and combinations of these, with 100 percent crushing.

### Bureau of Standards Sample

A STANDARD SAMPLE of portland cement, No. 177, has been added to the list of more than 200 standard samples of certified composition which the National Bureau of Standards issues for use in checking the accuracy of analytical procedures used in industrial and research laboratories. This standard is issued with a provisional certificate of analysis for the following constituents: SiO<sub>2</sub> 21.90, Al<sub>2</sub>O<sub>3</sub> 5.28, Fe<sub>2</sub>O<sub>3</sub> 2.38, TiO<sub>2</sub> 0.27, P<sub>2</sub>O<sub>5</sub> 0.05, CaO 64.25, SrO 0.05, MgO 2.42, SO<sub>3</sub> 1.59, Mn<sub>2</sub>O<sub>3</sub> 0.05, Na<sub>2</sub>O 0.14, K<sub>2</sub>O 0.56, loss on ignition 1.14. The price of this standard is \$4.25 per unit of three 5-gram portions sealed in glass vials to avoid changes in composition. Orders should be addressed to the National Bureau of Standards, Washington 25, D. C.

# CAL-WIC INDUSTRIAL SCREENS



## ...and 10,000 stone cutters

The quality of the early macadam roads depended largely upon the size of the mouths of the workmen who made them. For the pavement's originator, John Loudon McAdams, based his method on the use of uniform-sized stones that were less than 2" in diameter.

Since there was no accurate way of sizing road aggregate, McAdams relied upon his workers. Each stone cutter had to put his stones into his mouth before they could be accepted. If a stone was too big for the cutter's mouth, it was too big for the road. Obviously, the system was slow and inaccurate since some workers had huge mouths, and others no teeth.

Fortunately, today's road builders have no problem in getting accurately-sized aggregate. Modern equipment can screen tons of this essential material in one day—more than could be done by 10,000 of McAdams' stone cutters in a period of weeks.

You'll find that Cal-Wic Industrial Screens are ideally suited to modern screening machines. That's because they have the complete accuracy, extra durability and sustained resistance to abrasion, vibration and fatigue that means satisfaction to aggregate users and profit to operators.

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One of the newest cement plants in the industry is the Rillito, Ariz., plant of Arizona Portland Cement Co., which has been enlarged substantially since it was built

## Cement Clinker Capacity Will Reach 368 Million Barrels At End of 1956

By BROR NORDBERG

• Companies invested an estimated \$500,000,000 for 74,000,000 bbl. expansion in 1955 and 1956. Industry concentrating on working conditions and public relations

AS WE ATTEMPT TO REVIEW DEVELOPMENTS in the portland cement industry and discuss the outlook ahead, the industry is in the midst of the greatest expansion program in its history. About a half billion dollars has been invested in expansion of facilities scheduled for completion in 1955 and 1956, alone which will go far toward the elimination of cement shortages by the end of 1956. Supply should be generally adequate by the start of 1957 unless unforeseen developments occur.

The current program of plant building (1955 and 1956) will add 74 million barrels of clinker production capacity to the industry's capacity, and raise the total to an estimated national capacity of 368,500,000 bbl. Total increase will have been 153,600,000 bbl. from December 31, 1945, through December 31, 1956, which represents a 71 percent gain since World War II.

We use clinker capacity rather than cement capacity in these comparisons, for kiln capacity is a more realistic measure of a plant's ability to produce.

When compared with Bureau of Mines official figures for cement ca-

capacity, which were higher as of December 31, 1945, than a recent survey by an industry spokesman indicated, the expected clinker capacity at 1956 year-end will show a gain of 52 percent over 1945, and an increase of 25 percent over the 1954 figure. Approximately \$1 billion will have been spent by the industry for expansion and modernization from the end of 1945 through the end of 1956.

President Joseph S. Young of Lehigh Portland Cement Co., in a speech entitled "A Brief Perspective of The Cement Industry," presented before the Financial Analysts of Philadelphia on November 3, 1955, commented on the industry capacity as follows:

"In order to determine as accurately as possible what increase there has been in capacity from December 31, 1945, to December 31, 1956, namely from the end of World War II to the end of next year, an unofficial but thoroughly reliable survey of the industry has just been completed. This survey has produced some most illuminating figures.

"All companies were requested to

submit realistic clinker capacity figures for 1945 rather than the somewhat inflated cement capacity figures then in vogue in the industry. The total clinker capacity for December 31, 1945, predicated upon the figures as now revised by the members of the industry, was 215 million bbl. This more accurate potential production figure falls far short of the 242 million bbl. comparable capacity figure reported by the Bureau of Mines for 1945, indicating that the actual productive capacity of the industry at the close of World War II was about 27 million bbl. less than the official Government figures.

"However, the most astounding disclosure is that the total clinker capacity of all the portland cement plants operating in the continental United States at the close of next year will be approximately 368 million bbl., a gain of 71 percent over the revised 215 million bbl. figure for 1945.

"The official capacity for the entire industry at the close of last year was 294 million bbl. Accordingly, based upon the data developed by the sur-



vey, 74 million bbl. of new production will be added during 1955 and 1956 to bring the total capacity of the country to a staggering 368 million bbl.

"Because of the industry's herculean efforts to meet its obligations to its customers, Government agencies, and the public alike, expansion has been accelerated to the point where, assuming all capacity projected for 1956 will be completed on schedule, cement in most areas should no longer be in short supply by 1957. Moreover, although it is well nigh impossible to outguess the exact amounts of additional cement which may be required if and when a national highway bill is enacted, nevertheless, it would appear that, if the program is stretched out over a 10 to 12-year period, the future progressive increases in productive capacity now being contemplated should provide whatever additional quantities of cement may be needed."

### Main Expansion is in Older Plants

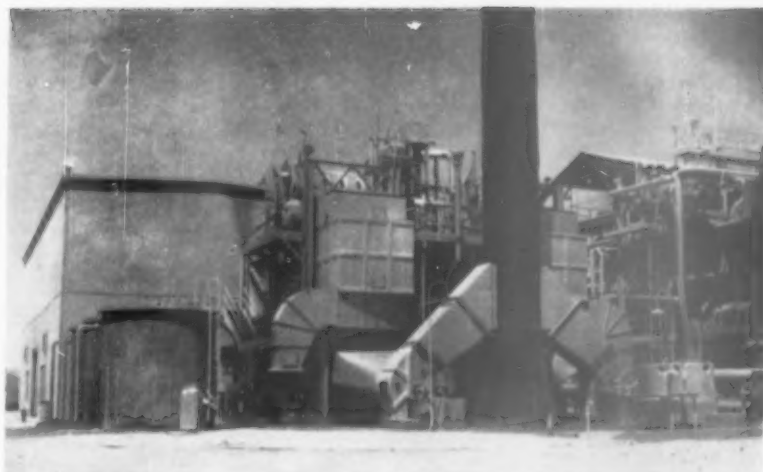
Tremendous pressures have been exerted on the portland cement industry through the shortage years, for failure to expand sufficiently to meet unprecedented demands for cement. There have been legitimate complaints, of course, but there has also been lack of realization of the facts and lack of appreciation of valid reasons for not launching an all-out nation-wide, expansion program earlier.

The fact that so few entirely new plants have been built has been interpreted as an indication of lack of initiative, by those without knowledge of the industry. It isn't realized that the substantial increases in capacity must and have always resulted from expansion to existing facilities. Added capacity from new plants is relatively minor.

Among reasons for this are economic facts that must be considered, among them the availability of suitable raw materials, long-range market potentials in a given area and transportation charges. During recent years of extremely high costs for plant and equipment, concentration on the expansion of older plants also has had the advantages of getting the job done more quickly and with lower outlay per unit of increased production. In our summary of productive capacity increases later herein, it will be noted that completely new plants account for little of the total increases in the 1955-1956 expansion program.

### Raising Output of Existing Facilities

A substantial total increase to national output of cement has been realized over the last several years through improved technology as related to existing facilities, which has not been



Waste heat boiler and power plant of Riverside Cement Co., Oro Grande, Calif.

fully appreciated. We refer to the speeding up of rotary kilns, improved methods of feeding kilns and grinding mills, the increased use of instrumentation for controls, preventive maintenance programs to minimize downtime, new applications of power equipment for material handling, and other devices to increase output.

Many millions of additional barrels of cement resulted from these improvements, and because plants were operated close to rated annual capacity. Otherwise, cement shortages would have shown up much worse during the period when the industry was gearing itself for the present expansion program. Forced production and failure to provide for adequate downtime, in the interests of high output, have had detrimental effects on the life of equipment, fuel efficiencies and in other ways.

### Public Relations

In the major expansion programs, which have involved additions of rotary kilns, grinding mills and related installations, it has been remarkable how little loss of production has resulted during construction, and the tying in of the new facilities with the old. It has required careful planning and execution to minimize interruptions to production and yet come up with integrated operations for best overall efficiency.

These newer major installations have been noteworthy too in improving the stature of the industry. Plants are being cleaned up within and without, in recognition of the importance of improving community relations and working conditions.

Dust collector manufacturers are having a field day as the industry strives for the utmost in dust control.

Backbreaking jobs are being eliminated through extensive use of powered material handling equipment and good housekeeping is being stressed like never before. Designs and layouts are such that plants lend themselves to being kept clean and stress on safety features has been intensified. Landscaping, paved areaways and driveways, attractive mill structures and use of high efficiency stack dust collectors have added up to substantial progress in establishment of good will in local communities. The cement industry is to be congratulated for its accomplishments in this direction, and deserves recognition for its efforts.

### How Big is the Industry?

At present, there are 157 portland cement plants in the United States. Several new ones are under construction and in the planning stage. There are also reports of new plants to be built which have not yet been substantiated in some cases. The annual payroll is about \$200 million now in wages and salaries for those directly employed by the industry, reflecting the importance of the industry in providing employment in local communities.

Total investment is about \$1.5 billion or, roughly, double the annual gross value of the industry's product at current production and price levels. The investment including current assets or working capital, to provide a job for one employe is among the highest in any industry. For plants nearly or fully depreciated, the investment per employe is in the range of \$15,000 to \$25,000 as reported for individual companies. It is higher by several thousands of dollars for operations but partially depreciated.

Currently, 70 percent of the com-

panies have such investment between \$15,000 and \$30,000 and figures of \$40,000 or more are not uncommon for more modern operations.

The investment per employe will become much higher (20 to 50 percent or more) when new facilities now under construction come into production. One of the more obsolete operations now under reconstruction will increase its investment per employe by more than 400 percent. A brand new plant has reported an investment of \$71,000 for every worker in the entire organization or \$98,000 for each mill worker. By comparison, the average investment for all industry is \$12,500 per employe, for plant and equipment after depreciation, land and financial reserves and current assets. The figure is \$17,500 for new operations.

Expenditures for machinery are abnormally high at this time as already indicated and there was no way for us to determine average figures that would be representative of "normal" figures. Similarly, it is difficult to project expenditures for supplies, materials, etc. The range in expenditures for machinery, supplies and payroll in 1954, according to reports received, ranged from a little over one dollar per bbl. of output to more than \$3 for one company. Most fall in the \$1.50 to \$2.00 range but the figures mean little since some companies obviously included sales expenses, etc. while others did not; and some companies included current capital expenditures, while others did not. They only serve to give an idea that the expenditures are very substantial for anyone desiring to project the figures.

To further emphasize size of expenditures, a 4 million bbl. company, in fiscal year 1955, spent \$1,700,000 for coal and power, \$900,000 for maintenance supplies and averaged \$1 million for capital expenditures over a 5-yr. period. Another company of the same approximate size averaged \$951,000 annually in plant investment over a 10-year period. A 1½ million bbl. new plant spent \$555,000 for coal, \$162,000 for power and \$398,000 for spare parts.

The foregoing is by way of introduction to discussion of specific plant expansions to date, expansion underway or planned, technological progress, developments in the improvement of community relations and working conditions and the progress being made in bridging the gap between cement supply and demand.

It was felt that the industry story needed telling, as a summary for the industry itself and for purchasers of cement and others directly or indirectly interested in cement. What follows

herein is based upon comments received from cement manufacturers in answer to our request for help, from facts already known and data available from other sources. Seventy-five percent of the industry's capacity was represented in returns to our single letter to company presidents, which is unprecedented in our experience and for which we hereby express our thanks.

### Cement Shortages

We present, first, a brief resumé of the situation with respect to cement supply, shortages and the conditions entering into the cement industry's decision to expand.

The portland cement industry produced to 30 percent of capacity in the 1932-1935 period, and was forced to operate at less than 50 percent of capacity until 1940. During the 1935-1945 period, productive capacity of the industry was cut by 10 percent to 240 million bbl. through retirement of obsolete plant facilities.

Production was 104 million barrels in 1945. Operations were at a 68 percent level of capacity in 1946 when production increased to 163 million bbl., which was then an all-time record. Cement consumption increased by substantial amounts each year thereafter, reaching to 271 million bbl. in 1954 when the industry kept operating at 93 percent of maximum capacity. Cement consumption increased at an average of 19 million bbl. per year for the 10-year period following World War II, breaking one record after another at an unprecedented rate which could not be predicted. Cement consumption for 1955 is estimated at 295 to 300 million barrels and predictions are that 320 to 330 million barrels will be used in 1956.

At the end of 1956, as already pointed out, the cement industry will have a potential annual capacity of 368,500,000 bbl. of cement clinker. That figure will be further increased in 1957 with completion of further expansion already in progress and planned. These programs, as they come into completion, are expected to take care of mounting demands that will result from the government-sponsored program for greatly expanded highway building. A road program of the magnitude proposed by the president would require an added 50 million barrels of cement on top of the 55-60 million barrels now used for the purpose. This is the industry's answer to demands for more cement.

### Reasons for Record Demands

Sparking the unprecedented demands for portland cement has been the unprecedented growth and pros-

perity of the nation. There have been other factors, too, which contributed to cement shortages and which deterred adequate expansion of cement manufacturing capacity.

Per capita use of portland cement has increased from 0.77 bbl. at the end of 1954 to an estimated 1.69 bbl. by the end of 1956. Among the reasons are new and improved uses of cement and concrete, including prestressed concrete, prefabricated concrete, soil-cement road stabilization, increased usage of concrete on the farms, the enormous development of the ready-mixed concrete industry and the increased volume for concrete masonry units and all manner of new precast products.

Most year-end forecasts on the outlook for business ahead have been low, the past few years, as even the experts fell short of the mark in estimating demands for construction.

### Financing Expansion

Most important as far as plant expansion is concerned, has been the availability of funds for financing, during years when the price-cost relationship offered no encouragement for plant building, because there were insufficient returns from the business.

It has cost an average of \$10 per barrel of annual capacity in the last few years to build a new plant or to make extensive increases of more than 50 percent in capacity. This means \$4 of investment is required to produce \$1 of sales. Thus, profits are eaten up fast when there is any marked drop-off from capacity operation. The net profit after taxes was about 45 cents per bbl. in 1955, or a return of 4½ percent on a \$10 investment.

Building costs for new operations are about three times the costs for older plants, with which newer facilities must compete. Many of the older plants are largely depreciated which is at the competitive disadvantage of newer operations.

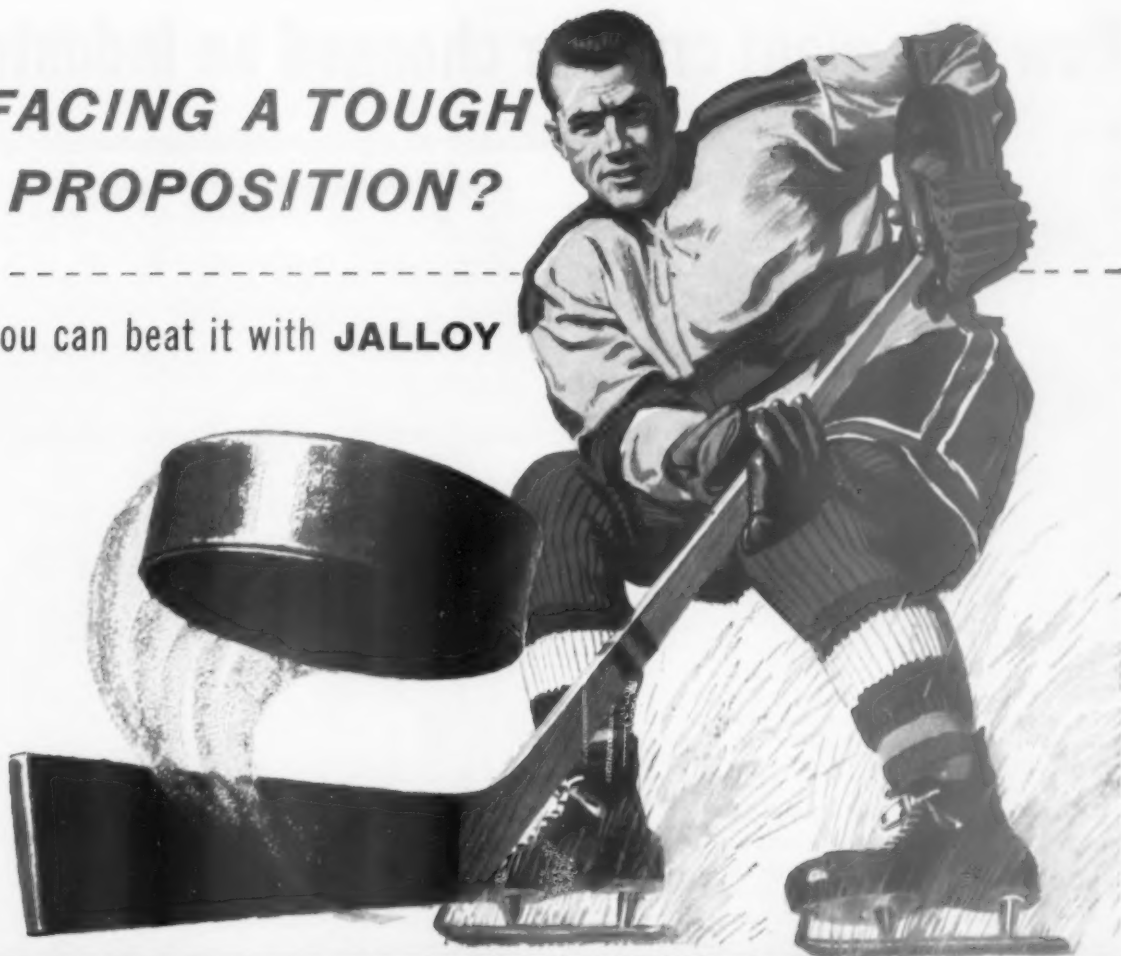
A difficulty is that savings in manufacturing costs flowing from new capital expenditures are usually offset by the increases in charges for depreciation. It was recently stated by Joseph S. Young, president of Lehigh Portland Cement Co., that if a new plant of modern design were constructed nearby a well-maintained plant of earlier vintage, the older plant would more than likely have the lower overall manufacturing costs.

As borne out by our figures, cited earlier, the older plants have far less investment per employe, the reasons being that much of their investment has been written off and they have more employes per unit of production.

(Continued on page 126)

# FACING A TOUGH PROPOSITION?

you can beat it with **JALLOY**



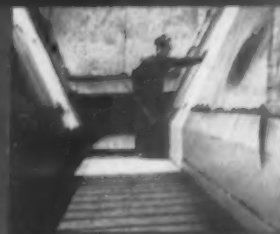
## J & L JALLOY HEAT-TREATED PLATE BEATS WEAR DUE TO ABRASION



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Jalloy Plate outlasts other steels in marine and 4 to 1.



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J&L Jalloy Heat-Treated Plate is the general purpose steel that is heat treated to provide longer wear on applications where impact and abrasive conditions are severe.

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Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_

# How this giant crusher changed an industry

● Here's the giant of them all... the world's first 4248 overhead eccentric jaw crusher... the new PIONEER powerhouse that changed an industry!

Big, tough jobs such as turnpike construction demand *tremendous production* of crushed stone at the *lowest possible cost*! No equipment could completely fill this demand until PIONEER introduced this new 4248 crushing giant. And in filling the demand, it changed the thinking and production methods of the industry.

## Big Production With 3 Big Savings

Production demands are much more easily met when you have this crusher on the job. For example, a PIONEER 4248 on the West Virginia Turnpike job crushed rock at the almost unbelievable rate of 700 tons per hour with 100 per cent crushing and a jaw setting of only 7 inches!

But it does a lot more than meet record-breaking production schedules. It results in *three big savings*. It saves the difference in cost between it and expensive *multiple* crushers; it saves drilling and blasting costs because it takes rock up to 40" x 46" in size; and it saves quarry-loading costs because fewer and larger loading machines can be used.

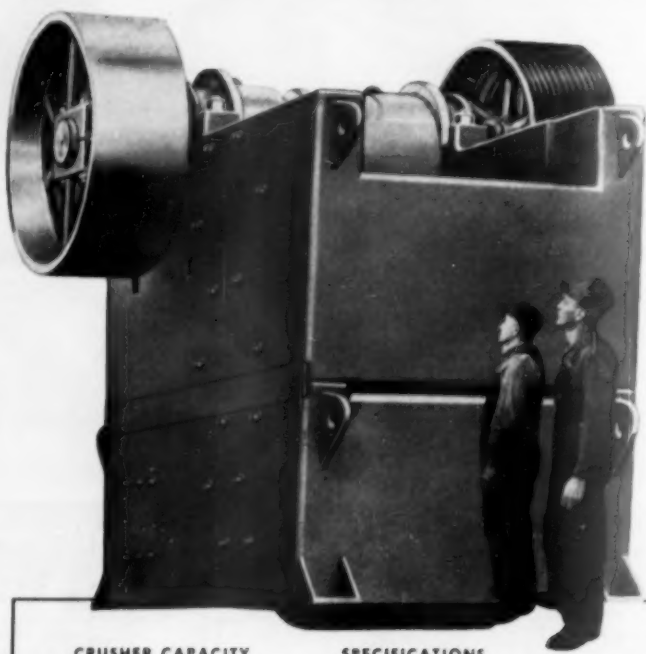
## Why Maintenance Costs Are Low

Features which reduce maintenance and down time: box-type, all-welded steel base which gives added strength with over-all reduced weight... jaw plates cast of tough manganese steel and designed to absorb cold flow and peening... split jaw plates which are reversible for double wear... self-aligning anti-friction bearings, precision fit for smooth and lasting performance... inner and outer eccentric shaft bearings mounted closer together than on any other anti-friction bearing crushers to lessen shaft strain.

In those cases when maintenance or repair is needed, oil pressure expands inner bearing races so bearings slide easily on the shaft if you wish to inspect or remove them. A hydraulic ram holds pitman arm forward when you need to replace toggle plates. Split flywheel hubs make removal and installation simple. You can quickly reverse jaw plates without special tools.

## Ask your crusher salesman these questions:

1. Are bearing housings saddle-mounted to assure constant alignment?
2. Is it possible to remove bearings hydraulically?
3. How closely spaced are inner and outer bearings?
4. Can jaw setting be adjusted by hydraulic means?
5. Can toggle plates be changed with hydraulic assist?
6. Are flywheels provided with split hubs for easy removal?
7. Is crusher made with split base for easy installation?
8. Does crusher have 2 tension rods?



### CRUSHER CAPACITY

Field operations indicate that for each inch of jaw opening, capacity increases approximately 100 tph. This rate is with a relatively high crushing percentage. In field installations, production has reached 700 tph with 7" setting.

### SPECIFICATIONS

Jaw opening.....42"  
Width of jaws.....48"  
Range of setting.....5'-12"  
Over-all depth, moving jaw.....104"  
Over-all depth, stationary jaw.....90"  
Weight (approximate).....94,200 lbs.  
HP required.....180-210



## PIONEER ENGINEERS WORK HAND IN HAND WITH YOU

▲ In Tyler Breslin Quarry's high producing PIONEER Turnpike Plant (shown at left), output of the 4248 Jaw Crusher often exceeded 700 tph with 7" jaw setting.

This plant also illustrates the factory-distributor-owner teamwork for which PIONEER is so famous. First, the Distributor analyzed requirements and sent the data to PIONEER's Engineering Department which prepared complete erection prints. Then an experienced PIONEER engineer was sent to supervise installation of the plant.

But PIONEER's responsibility didn't end then. Its Alert Distributor Service Organization and factory-trained maintenance men are always on call whenever quick service is needed.



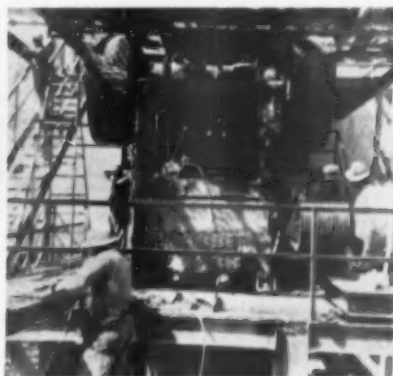


In this installation the primary plant feeds a system producing six different sizes of rock and sand. Heart of the system is a PIONEER 174 Primary which has a 48" x 16" PIONEER ORO Feeder and a PIONEER 4248 Jaw Crusher. The feeder is constructed of  $\frac{5}{8}$ " thick cast manganese steel pans with integrally

cast links, which withstand the huge loads dumped by quarry trucks. It correctly positions large, odd-shaped rocks before they enter the crushing chamber of the 4248 Jaw Crusher. It also controls the amount and rate of feed to the crusher so that maximum output is reached and maintained.



Workmen are dwarfed by PIONEER's 4248 Jaw Crusher. Designed to reduce blasting and drilling costs, and to turn out enormous tonnages, this 95,000 lb. giant is owned by General Crushed Stone Co. of Easton, Pa.



This PIONEER 4248 Jaw Crusher is part of the Apex plant of U. S. Lime Products Co., Las Vegas, Nevada. Note hydraulic mechanisms for holding pitman forward when adjusting crusher setting or changing toggle plates.



PIONEER assembles 4248 Jaw Crusher. Here you see the 19,000 lb. pitman arm with the 5200 pound shaft assembly being lowered into the 4 cu. yd. crushing chamber. Length of moving jaw is 104", stationary jaw 90".

For further details write Pioneer Engineering Works, Inc., Minneapolis, Minnesota (subsidiary of Poor & Company, Chicago) or your nearest PIONEER distributor.

**BUY BOTH!**  
HIGHER OUTPUT  
LOWER UPKEEP

# Pioneer

*Continufluo* EQUIPMENT

Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 12, Minn.  
Subsidiary of Poor & Company • Chicago

Please send information on equipment checked.

☐ GRAVEL PLANTS ☐ WASHING PLANTS ☐ MECHANICAL FEEDERS  
☐ ROCK PLANTS ☐ BITUMINOUS PLANTS ☐ VIBRATING SCREENS  
☐ JAW CRUSHERS ☐ APRON FEEDERS ☐ BUZZER SCREENS (LIGHT DUTY)  
☐ ROLL CRUSHERS ☐ ORO FEEDERS ☐ CONTINUFLUO CONVEYORS

Name

Company

Address

City  Zone  State

Assuming a current prevailing wage rate of a typical plant employee, the investment of \$100,000 or slightly less per man would appear justified according to current interest rates in order to reduce labor costs.

The much greater investment per employee in new plants reflects this and explains why they can compete with the older plants and why there are such enormous investments to rehabilitate the older plants.

Magnitude of the postwar boom came into sharp focus about 1950. Many companies have since gone into debt, some for the first time in many years, in order to finance plant construction and rebuilding.

Problems besetting the industry as it has sought to modernize and expand were summed up by the president of one of the single-mill companies in the following:

"I have spent 30 years in the cement business and keenly regret that our industry seemingly fails to adequately tell its story or to find a way to do so. It approaches the tragic when you have a good story but just can't get it over to your customers, the public, your employees, etc. I think our company is typical of those in our industry—during the 'dirty thirties,' when the capacity of the industry was so far in excess of demand, no one in his right mind could possibly think of expansion or of investment in his plants. Then came the war years, particularly 1943 and 1944, when, because construction was ruled out, precious few cement companies were able to as much as break even. And over this great period of almost 25 years, the investment fraternities tagged our industry as highly cyclical, a prince or pauper situation, with no attractiveness. So when the boom started after World War II ended, it took our company a fat six years to get our financial house in order, and to be able to undertake improvement and expansion with the assurance that it made sense to do so; and you are aware of the effects of straight-line depreciation on old equipment and properties in need of replacement at today's vastly inflated costs.

"It has been a completely inherent part of the picture that practically all increased capacity during this period has come out of existing plants, for the simple reason that it could be done more quickly this way, and the capital just was not available for new plants. In our own company we were able to get about a 10 percent increase out of the same facilities by various means, particularly by disregarding overtime costs, etc., and giving old machinery a bad beating, all in behalf of the customer-public. Then, too, in-

creased capacity in our business has meant increases in every department of the plant, for a new kiln is meaningless unless quarry facilities, raw grind and finish grind facilities, etc., have been made adequate prior to installation of the kiln. All of these things, of course, you already know."

Joseph S. Young, in his speech before the Financial Analysts of Philadelphia (already referred to) covered some of the economic problems of the industry as follows:

"The price of cement has not advanced as rapidly as the price of other building materials. Since 1939, according to the United States Bureau of Labor Statistics, the average price of cement has risen 78 percent, whereas the composite price of all other building materials included in the index has risen 159 percent. In comparison with prewar prices, cement is still by far the cheapest major construction material on the market.

"The industry is confronted with formidable increases in manufacturing costs next year. On the heels of the generous concessions made by motors and steels, labor rates should and will be jacked up in the cement industry. The cost of coal and other fuels is rising. The price of grinding media, lubricants and repair parts will be considerably higher than a year ago. In short, practically everything we purchase to make cement will cost us substantially more money. Because of these foreseeable and material increases in manufacturing costs, it would appear that a modest advance in cement prices would be justified.

"As you know, the National City Bank publishes annually a graph intended to show the ratio of net income to sales for the various industries in the country. Last year, according to this tabulation, the net income for the cement industry was 15.3 percent of sales, which was a higher ratio than that of any other industrial group. Naturally, in view of such publicity, questions arise about the reasonableness of the sales return for the cement industry. Unfortunately, the fault lies with our own peculiar methods of accounting which have long presented a distorted picture when comparisons are made with other industries.

"The amount reported as 'Sales' by the cement industry is merely the mill net received for its product in bulk f.o.b. plant. The manufacturer actually receives about one-third more than this amount from customers as reimbursement for prepaid freight and the cost of paper bags. These items require the maintenance of large sums of working capital and both should be included as part of total net sales in order to determine a correct percent-

age return. If prepaid freight and paper bags were added to our mill net return, and if we as an industry reported total income from sales rather than only a part of our total billings, then net profit for the year 1954 would have dropped to about 11½ percent of sales, which would be a much more defensible figure.

"However, we must also bear in mind that, because of the ridiculously low values at which the cement industry is today carrying machinery and equipment purchased years ago, depreciation charges are far from adequate. If we assume that a new plant will cost \$10 per barrel of capacity and, if well maintained, will last 25 years, then the rate of depreciation should be \$10 divided by 25 years, or 40¢ for each barrel sold, if the plant is operating at full capacity.

"However, the industry is now receiving an average of only 17¢ to 18¢ a barrel for depreciation. If the industry had been permitted to charge depreciation at a rate which would enable it to pay the full costs of replacement (namely about 40¢ per barrel) and, if it had been allowed to take this rate of depreciation as a tax deduction, then its net income in 1954 would have been only 8½ percent of total billings, which would put cement in the same class as chemicals, glass products, and other allied industries requiring heavy capital investment."

### Technical Progress-Expansion

Comments to our questions as to technical advances which have increased output and reduced costs, and on the extent of productive capacity increases during recent years of peak demand, pointed up the principal trends in cement manufacture.

The unquestioned fact that sustained high rate of production is the most effective way to hold down unit costs was stressed in letters from company executives. In line with this, the industry has had its maintenance records under study and has adopted planned inspection programs, in many plants, in order to anticipate potential breakdowns in advance and take care of weak spots. Very detailed records of kiln production time and downtime are being kept and applied to corrective action, greatly increasing annual output of clinker.

Another pronounced trend is one of replacing obsolete equipment, as it wears out, with larger and more rugged equipment for greater unit output and to reduce downtime. It is evident that the average size of all major equipment is becoming larger, including crushers, raw and finish mills, kilns, quarry haulage units, etc.

(Continued on page 128)

*under  
the boiler  
in a steam  
plant...*



*it's constant-costs that count!*

**Be Thrifty!** Expensive boiler installations designed to burn fuels with limited futures is doubtful wisdom. The sensible alternative is to *bank on Bituminous!* Plotting your costs over the long run will prove efficiency and lowest cost in most cases. For, Bituminous reserves are unlimited—they're nearest to most manufacturers—coal technology improves burning equipment, efficiency and cost year by year.

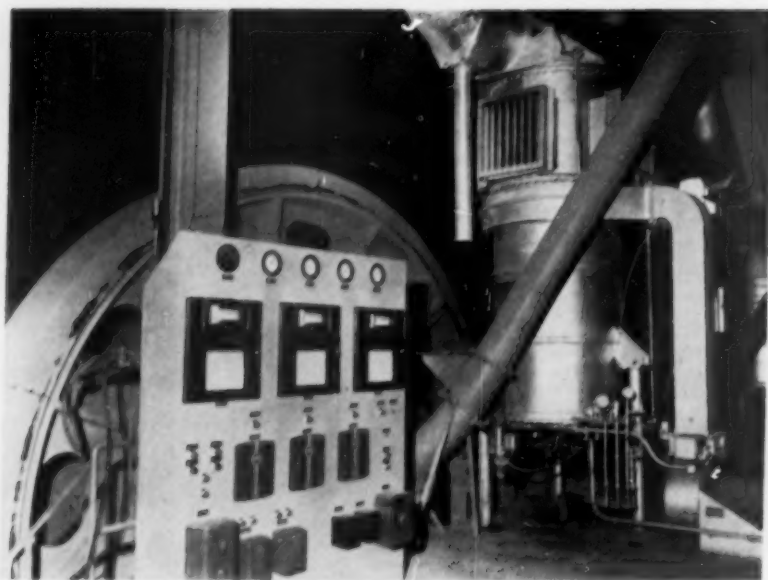
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Pipe carries rejects from air separator into feed end of raw mill, Dragon Cement Co., Northampton, Penn.

Longer kilns are being substituted for shorter ones and, in a growing number of cases, preheating equipment of the Humboldt suspension type is being installed in connection with short kilns with effective results. We refer to the article in this issue discussing the suspension preheater installation recently completed at the Catskill plant of Alpha Portland Cement Co.

Long kilns and preheater installations are to make utmost use of otherwise wasted excess heat, and the continuing installation of air-quenching type clinker coolers serves to recover otherwise wasted heat at the opposite end of the kiln.

Instrumentation continues to have more widespread use and is being credited with increasing kiln production as well as improved control of quality of product. Newer kilns are always equipped with many thousands of dollars worth of instruments for indicating, recording and/or controlling the firing variables. The continuous oxygen analyzer has now become a universally-used tool to measure the effectiveness of firing operations. Modern electrical switchgear and the use of unit substations throughout the plant are a feature of the majority of new installations.

In addition to larger grinding units, more effective use is being made of closed circuit systems and great emphasis is attached to control of proportioning and rate of feed into grinding mills. Attention to details such as this, in order to attain uniformity of flow at optimum rate into grinding mills, and to ball loadings have been

effective in improved performance and production. Combined drying and grinding circuits for raw materials in dry process plants have become standard practice in newer installations. Among other details, much stress is being put on regulating feed into kilns and with favorable results.

Among other trends are the widespread use of air-cooling of cement in closed circuit grinding systems and the installation of silo-loading systems for direct filling of cars and trucks below. In quarry developments, accepted practice is to locate primary crushers in the quarry.

Two companies reported that they have added to their production of portland blast furnace slag cement, which increases the output of finished cement from a given quantity of clinker.

Among the more typical comments to the questions set forth on technical progress, expansion and adequacy of output were the following:

#### LARGE MULTIPLE-PLANT COMPANY:

"The production of portland blast furnace slag cement at two of our plants has increased the output of finished cement from a given quantity of clinker. Improved operating practices, installation of more efficient equipment, improved repair parts, and preventive maintenance and cost reduction programs have all contributed to increased output and reduced costs.

"Increased capacity through new technology and expansion has been 2,541,000 barrels.

"Additional production expected through expansion (now under construction)—3,000,000 barrels.

"We have additional plans for further expansion of our capacity which will be announced as they materialize."

#### EASTERN COMPANY WITH TWO PLANTS:

"Since 1949 there have been many technical advances which have contributed to increased output and reduced costs. These include new and larger quarry equipment, location of a crushing station in the quarry, installation of larger and more efficient grinding units, a great deal of new automatic electric switchgear, larger kilns, clinker coolers, and bulk loading of cement directly from the silos. This, of course, is only a partial listing and there are many other important things which we have done of a somewhat lesser size.

"Since 1949 our productive capacity has been increased by 2,300,000 barrels of annual capacity. We are planning a 1,100,000 barrel annual capacity increase at one plant. During the current year we completed a 240,000-bbl. increase in annual capacity at our other plant. It seems to us that the increases in capacity which we have made or have immediate plans for making, along with the substantial plant capacity increases of other companies serving our normal marketing areas, should provide ample cement for all users during 1956."

#### MULTIPLE-PLANT COMPANY:

"We are currently spending over \$10,000,000 for extensive plant improvements and expansion. That will account for almost 2,000,000 barrels of added capacity, at least half of which will be available in 1956. Another \$7,000,000 worth of various programs are on our books for immediate consideration."

#### EASTERN MANUFACTURER:

"We have installed a preheater on one of the kilns to utilize excess heat, which has increased the capacity of the kiln. Other minor changes in operating equipment can be considered as technical advances.

"In the last few years we have increased the capacity of our plants from 2,400,000 to 4,500,000 bbl.

"We have no major plans for further expansion now, but some plant improvements for efficiency should slightly increase production.

"We feel that our increased capacity, along with other capacity recently added in our general market, and new output in 1956 should take care of consumer demands unless unforeseen conditions would interfere with the complete production of present facilities."

(Continued on page 134)





Down time is no joke.

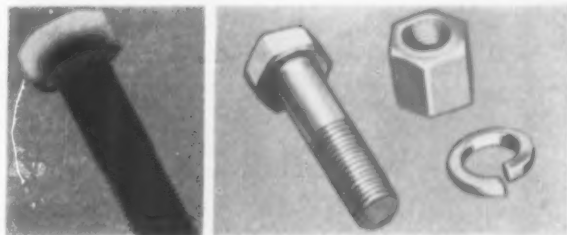
But it happens at times when track hardware gives out.

If you replace with original Caterpillar hardware, here's what you're sure of: bolts, nuts, capscrews and lock washers made from prechecked fine-grade steels, carefully hardened and tested, finished to the strictest specifications in the industry. You're sure of longer wear life, no matter how tough your jobs come. You're sure of less down time in the future.

If you replace with substitute hardware—can you be sure of anything?

**Better get Caterpillar parts every time.**

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

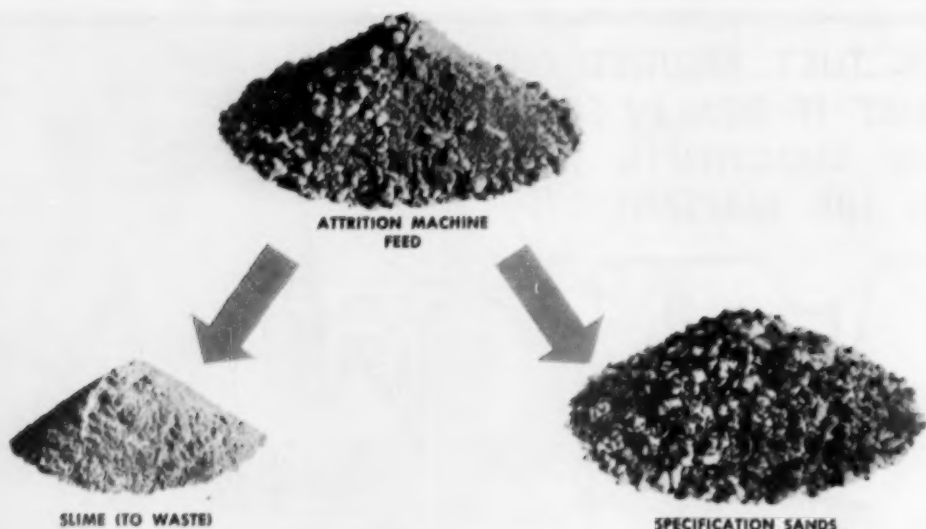


On the surface, CAT® hardware looks like ordinary kind. But etched cross section of newly designed track bolt (left) shows depth of special "Hi-Electro" hardening penetration in bolt head.

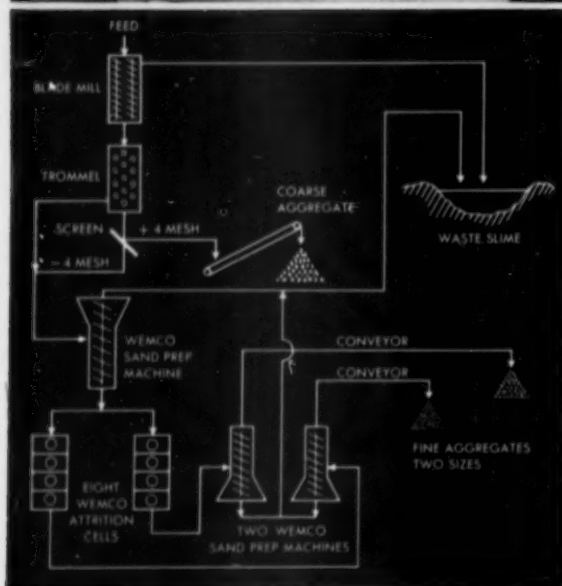
# CATERPILLAR\*

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**If you have a clay problem—**  
**Here's Proof of how WEMCO ATTRITION MACHINES**  
**break down cemented materials**



The above photographs clearly illustrate how the Wemco Attrition Machine removes clay cementing material from sand particles in the plant of a California aggregate producer. With ordinary scrubbing methods this producer was unable to break down the cementing material present in order to meet State aggregate specifications. After installation of Wemco Attrition Machines, this operator was able to scrub loose the cementing material and then remove it by desliming. Note the clean, sharp sand particles produced in the process. The result was a higher profit aggregate of greatly improved quality which fully complied with State specifications.

◀ The Wemco Attrition Machine is a new and more efficient method of washing sand particle surfaces by controlled turbulence of high density pulps. Its thorough abrading action literally scrubs the clay from sand particles more completely than methods formerly used and permits the recovery of clean aggregates for marketing.

◀ Flowsheet of aggregate plant shows use of eight Wemco Attrition Machines in conjunction with two No. 48 Wemco Sand Preparation Machines. Previous to installation, operator was unable to meet fine aggregate specifications.

WRITE WEMCO TODAY for further information on how Wemco Attrition Machines can improve your aggregate operations. Wemco facilities are available for attrition tests on your samples, if desired.



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# INFORMATION

## TO HELP YOU MEET TODAY'S PROBLEMS AND TO MAKE PLANS FOR TOMORROW

You can obtain catalogs listed on these pages by merely checking and mailing the coupon below

- 1 **AIR FILTERS**—Cambridge Filter Corp. has published two bulletins describing and illustrating its Aerosolve air filter, and the Absolute filter. Construction details, filter characteristics and advantages, and a list of companies, institutions and research laboratories using the filters are included.
- 2 **BELT CONVEYOR CARRIERS**—Stephens-Adamson Manufacturing Co. has announced Bulletin 355, covering the line of standard belt conveyor carriers. A long center roll carrier with either 35 to 45 deg. slope and rolls for greater carrying of light materials is described. Special carrier units, belt conveyor trippers and accessories are also included.
- 3 **BULK WEIGHING SCALE**—Richardson Scale Co. has introduced Bulletin 3649A, describing the E-50 bulk weighing scale for process weighing. Construction, capacity, accuracy, and process weighing features are discussed. Four different installations are illustrated, each using a different type feed mechanism. Four diagrams show scale dimensions and feeding arrangements for free-flowing, powdered and lumpy materials. Special features are also described.
- 4 **CONCRETE BLOCK**—The Lith-I-Bar Co. has published Vol. 1 Nos. 2, 3 and 4 of the "Lith-I-Bulletin," featuring data on various concrete block plants using Lith-I-Bar block making equipment. A section on used and rebuilt equipment is featured in each issue.
- 5 **CONCRETE PIPE FORMS**—The Quinn Wire and Iron Works has announced publication of a catalog on its complete line of equipment, including concrete pipe forms for the production of standard and special types of culverts, sewers, manholes, septic tanks, cattle passes, etc. Bending rolls for shaping wire fabric used in making reinforced concrete pipe, and machines for large scale production of medium and larger sizes of concrete pipe are listed. Methods of manufacturing pipe by the wet and semi-dry processes, production suggestions and standards, and comparative capacities of corrugated metal culverts and concrete pipe culverts are given.
- 6 **CONCRETE ROOFS**—Zonolite Co. has brought out a booklet describing and illustrating Bermuda concrete roofs made of Zonolite concrete, a combination of portland cement and vermiculite. The fireproof, insulating, lightweight, permanent and maintenance features of the roofs are given.
- 7 **CONSTRUCTION INDUSTRY DATA**—Pioneer Engineering Works, Inc. has published the eleventh edition of "Facts and Figures," a pocket reference booklet for the highway, heavy-construction or other basic industries. Subjects covered include aggregate specifications, crusher settings, feeder capacities, electrical data, earthmoving equipment formulae, screens, tank capacities, trigonometric functions, and standard gauges of wire, together with an eight-page glossary of terms of the trade. A section on asphaltic materials is also included.
- 8 **CONTROL TRANSFORMERS**—General Electric Co. has released a 32-page catalog describing the complete line of control transformers, including autotransformers, machine tool transformers and special application models. Designated Bulletin GED-2767, it contains ratings, dimensions, product features, and model numbers. List prices, weights and wiring diagrams are also included. A special section shows panel and machine tool voltage regulation curves for use in selecting the proper transformer for given applications.
- 9 **CRAWLER-DRAWN SCRAPER**—Caterpillar Tractor Co. has introduced Form 31700, entitled "A New Caterpillar Scraper, the No. 463," describing and illustrating the four-wheel, crawler drawn scraper. Features, such as higher apron lift and greater ground clearance, are also described.
- 10 **CRUSHING AND HANDLING EQUIPMENT**—Diamond Iron Works, Division of Goodman Manufacturing Co. has published Catalog D-106, describing and illustrating its general line of crushing and handling equipment for use in quarries and construction work. Included are stationary and portable crushing plants, jaw and roll crushers, vibrating screens, conveyors, feeders, storage bins, scalpers, scrubbers, washers and hammermills.
- 11 **CRUSHING PLANTS**—Denver Equipment Co. has published a bulletin, No. C12-B-16, on the Type "J" portable and semi-portable crushing plants. Specifications and diagrams of the portable crushing, screening and loading plant give size, capacity and operation details. Two other mobile units, including trailer crushers are also described.
- 12 **CRUSHING RESISTANCE OF STONE**—Pennsylvania Crusher Div., Bath Iron Works Corp., has published a booklet entitled "Measuring the Crushing Resistance of Rocks and Ores," by Benjamin B. Burbank, metallurgist. Methods and means for measuring crushing resistance and abrasiveness of rocks, minerals and ores are discussed and illustrated.
- 13 **ELECTRICAL EQUIPMENT**—Allis-Chalmers Manufacturing Co. has published the Third Quarter, 1955 issue of "Electrical Review," its table of contents reading as follows: Breaker Design . . . 12,500 Amperes/Cubic Foot; Power of the Future; Versatility Cast Into New CT's; American Hydro Power in the 20th Century; Residual Voltage in Induction Motors Influences Load Transfer Time; and Evaluating Neutral Regulators.
- 14 **HYDRAULIC MATERIAL HANDLING SUPPLIES**—Meckum Engineering, Inc. has compiled a condensed catalog of supplies, etc., entitled "Pipe Fittings and Supplies for Hydraulic Material Handling." Designated Bulletin 600, it includes complete tables of specifications, as well as other data on pipe, hose, clamps, couplings, valves, controls, fittings, elbows, etc.
- 15 **INDUSTRIAL ENGINE**—Westinghouse Air Brake Co., Le Roi Division, has published an eight-page bulletin describing the industrial H540 and H844 V-8 engines. Forty photographs, charts, drawings and diagrams are used to illustrate the design, performance and advantages of the two engines, which operate on gasoline, natural gas, or LP gas. Applications and specifications are listed as well as available optional equipment.
- 16 **LUBRICATION SYSTEMS**—The Farval Corp. has brought out a bulletin entitled "Studies in Centralized Lubrication," describing and illustrating its centralized lubrication systems. Typical application photographs are included.
- 17 **MACHINE PARTS**—Caterpillar Tractor Co. has prepared Form DE 591, entitled "Just as good . . . ?," which compares parts available from the machine manufacturer to those offered by substitute parts manufacturers.
- 18 **MAGNETIC WALL CHARTS**—Methods Research Corp. has issued a pamphlet illustrating and describing "Magne-Trol" magnetic steel boards on which visual aids may be placed for personnel control, in and out registering, job control, machine loading graphs, etc.
- 19 **MANHOLE CONCRETE BLOCK**—Boscor Co. has announced a four-page brochure on catch basins and manholes, explaining the manufacture of concrete barrel and better block. Manufacturing equipment is pictured, and block dimensions are given.
- 20 **MASONRY WATERPROOFING**—Standard Dry Wall Products, Inc., has released Circular No. 38, on the Thoro system of waterproofing concrete masonry. Typical application photographs, before and after, and a line drawing showing various danger points are included.
- 21 **MATERIALS HANDLING**—Caterpillar Tractor Co. has issued Form D565, entitled "Material Handlers At Work," describing how to handle materials efficiently, and what machines to use for specific jobs. Actual customer jobs using different machines are discussed and illustrated.

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- 22 **MACHINE TOOLS**—Twiss Disc Clutch Co. gives the story of the evolution of machine tools, starting with the cave men and his crude implements, continuing through to machine tools of today, and finally projecting into the machines that make machines of the future. The story is told in Vol. 17 No. 3 of "Production Road" magazine. Also featured are articles on application of the company's products throughout industry.
- 23 **MOTOR GRADER**—Allis-Chalmers Manufacturing Co., Tractor Group, Construction Machinery Div., has issued Catalog MS-446, giving engineering, design and performance features of the heavy-duty "Forty-Five" motor grader. Included are safety features, specifications, data on the 120-hp. diesel engine, and a list of standard and optional equipment.
- 24 **OXYGEN ANALYZER**—Arnold O. Beckman, Inc. has brought out Bulletin 108A, describing the Model F3 oxygen analyzer. The operating principle is illustrated, typical applications are given, and technical data such as operating ranges, response rates, sampling equipment, etc. are included.
- 25 **PORTABLE CONCRETE TESTING MACHINES**—Soltest, Inc. has announced Bulletin CT-711, describing and illustrating portable concrete testing machines, fixture attachments and accessories. Apparatus for preparation of concrete specimens for strength testing and for slump yield and air entrainment testing are also shown. Included are technical descriptions, size and weight specifications, and product and application illustrations.
- 26 **POWER UNIT**—Allis-Chalmers Manufacturing Co. has brought out an eight-page catalog, No. MS-455, giving design, engineering and performance data on the four-cylinder, 60-hp. Model W-226 power unit. Specifications, cut-away views, photographs, and special and extra equipment lists are given.
- 27 **PRESTRESSING WIRE**—Union Wire Rope Corp. has published a brochure describing and illustrating "Tufwire" stress relieved steel tendons for prestressed concrete. Standard reel lengths are given, as well as graphs, tables giving dia., gauge, weight, tensile strength, etc., and typical application photographs.
- 28 **PROBLEMS IN MATERIALS HANDLING**—Towmotor Corp. gives a series of case histories which show how various companies have solved difficult materials handling problems, in a recent issue of "Handling Materials Illustrated." The case histories are graphically illustrated, and a section covering some of the latest improvements in materials handling equipment is included.
- 29 **QUICK-OPENING DOORS**—Struthers Wells Corp., Special Equipment Div., has released Bulletin SW-553, describing and illustrating quick-opening doors for processing equipment, such as vulcanizers, impregnators, sterilizers, concrete block curing vessels, ovens, etc. Automatic or semi-automatic in operation, the units are available in Ring-Lok and Wedg-Lok types.
- 30 **ROLL CRUSHERS**—The Manufacturers Equipment Co. has issued a bulletin describing and illustrating MECO single-roll crushers for reducing materials to sizes ranging from 3/4- to 4-in. Specifications, an installation drawing, and sectional views are included.
- 31 **ROUND STEEL STRAPPING MACHINES**—Gerrard Steel Strapping Div., United States Steel Corp. has published a brochure describing Models TI, N, and LK round steel strapping machines for tying for shipment products weighing up to 100 lb.
- 32 **SEMIOUTDOOR BOILER INSULATION**—Industrial Mineral Fiber Institute, Inc. has issued a reprint of an article entitled "Latest Practices In . . . Insulating Semioutdoor Boilers," from the April, 1955, issue of "Power" magazine. A chart on how to determine the effectiveness of mineral wool block insulation is included.
- 33 **SEWER LINING**—Amercoat Corp. has published an illustrated eight-page brochure describing T-Lock Amer-Plate, a continuous plastic sewer lining. Major sewer projects are shown, and complete information is given on its composition, physical and chemical properties, and the method of incorporating the lining in precast and cast-in-place concrete sewer pipe and structures is described.
- 34 **STEEL STRAPPING MACHINE**—Gerrard Steel Strapping Div., United States Steel Corp., has prepared a booklet describing and illustrating the Model G round steel strapping machine. The unit is designed to tension, tie and cut round steel strapping in a single operation. The equipment is particularly useful in bundling and palletizing applications.
- 35 **THICKENERS, CLARIFIERS AND AGITATORS**—Hardinge Co., Inc., has brought out a 16-page catalog, No. 31-E, describing the line of thickeners, clarifiers and agitators for mining, chemical, metallurgical and other industrial processing operations where separation of solids from a liquid is required. Applications are discussed, and construction details for "Auto-Raise" equipment are given. A formula is provided for determining tank diameters of thickeners for any given set of data.
- 36 **TILE AND PIPE MACHINERY**—Nashua Tile Co. has issued Bulletin NTC-G1, describing and illustrating Hydro-Tile concrete tile and pipe machinery. Details are given on various models and the power panel, jackets and working parts. Specifications are given for each machine model. Dimensions are also listed.
- 37 **TRACTOR ATTACHMENTS**—Caterpillar Tractor Co. has issued Form DE584, an eight-page booklet entitled, "Caterpillar Attachments Provide . . ." describing attachments for tractors and motor graders. Included are hydraulic steering boosters for motor graders, cast steel final drive cases, rolled steel cancase guards, and electric starting systems.
- 38 **TRUCK PARTS DEPOTS**—Gerlinger Carrier Co. has released a brochure announcing three main parts depots in Oregon, Ohio and Tennessee, which carry a complete stock of parts in relation to the number and types of Gerlinger material carriers and fork lift trucks in each territory.
- 39 **VIBRATING SCREENS**—Pioneer Engineering Works, Inc. has prepared a 20-page booklet, Form 552, describing its line of Super Service vibrating screens. The line includes eleven standard sizes of single-mounted and four standard combination sizes of tandem-mounted vibrating screens. Field pictures and general and detailed views of various units are given, as well as construction features. Data is also given on capacities, screen installation, typical applications and attachments.

**Detach and Send Us This Post Card!**

ROCK PRODUCTS, 79 W. Monroe St., Chicago, Ill.

(RP 1-56)

I would like to have the items circled

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
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31	32	33	34	35	36	37	38	39	40
41	42								

(Please print or typewrite name and address)

Name \_\_\_\_\_ (Position) \_\_\_\_\_

Street \_\_\_\_\_

Company \_\_\_\_\_

City &amp; State \_\_\_\_\_

- 40 **WATERPROOFING**—Standard Dry Wall Products, Inc. has published Circular No. 17, describing and illustrating the Thoro system of preventing or correcting water problems above or below ground. Various products are listed and described, and typical application photographs are given. A specification guide is also included.

- 41 **WIRE ROPE FILMS**—MacWhyte Co. has announced the availability of a film entitled "Lifeline," showing a step-by-step trip through wire and rope mills, where all processes in making wire and wire rope are explained. The tour closes with an explanation of ways wire rope is made into various slings and assemblies. The film is available to engineering societies, clubs and associations on a loan basis at no cost by writing to the MacWhyte Co., Public Relations Mgr., Kenosha, Wis.

- 42 **WIRE ROPE SLINGS**—Wickwire Spencer Steel Division, The Colorado Fuel & Iron Corp., has prepared a bulletin describing and illustrating Dura-grip wire rope slings and the various assemblies for which slings can be used. A complete listing of dimensions and rated capacities is given, as well as construction details and advantages.



# For Cooling Hot Cement

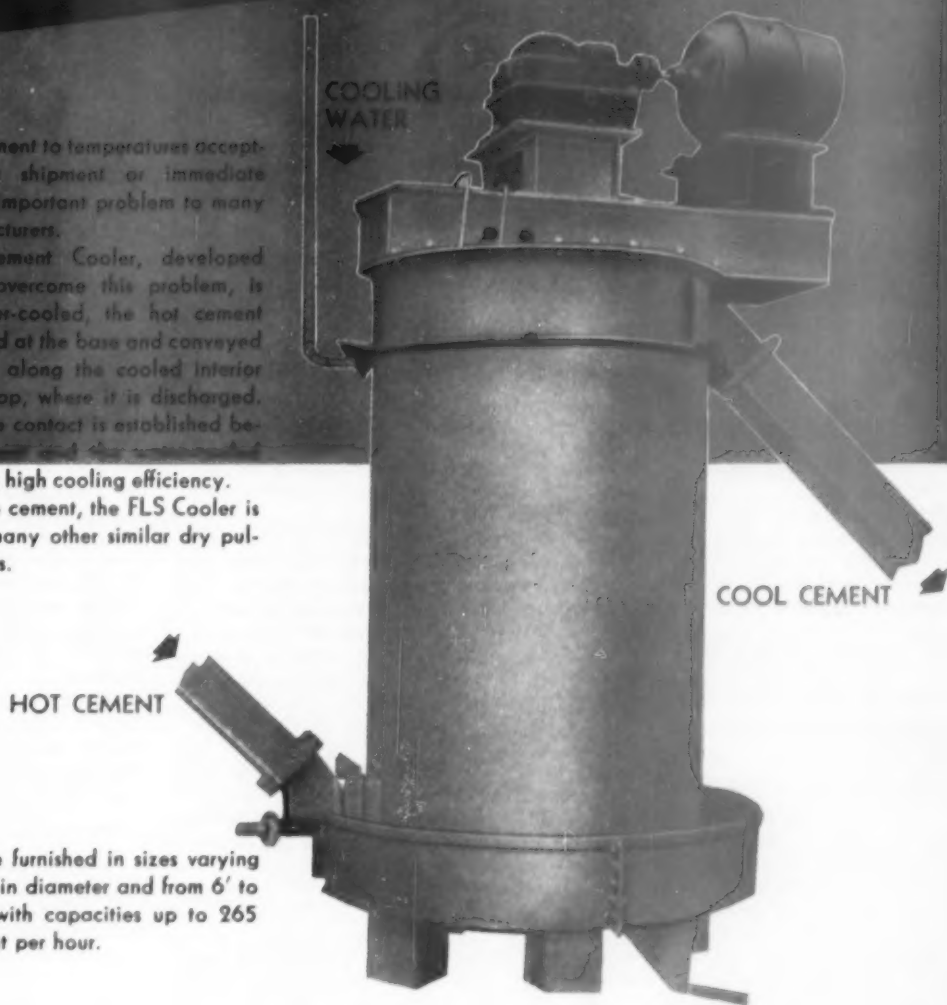


Cooling hot cement to temperatures acceptable for bulk shipment or immediate bagging is an important problem to many cement manufacturers.

The FLS Cement Cooler, developed especially to overcome this problem, is externally water-cooled, the hot cement being introduced at the base and conveyed in a thin layer along the cooled interior surface to the top, where it is discharged. Thus an intimate contact is established between the cement and the cooled

surface, assuring high cooling efficiency.

In addition to cement, the FLS Cooler is applicable to many other similar dry pulverized materials.



FLS Coolers are furnished in sizes varying from 3' to 6'6" in diameter and from 6' to 18' in height, with capacities up to 265 barrels of cement per hour.

F. L. Smidth & Co., A/S  
Vestergade 33,  
Copenhagen K, Denmark

F. L. Smidth & Co.  
11 West 42nd Street  
New York 36, N. Y.

F. L. Smidth & Co., Ltd.,  
105, Piccadilly,  
London, W. 1, England

F. L. Smidth & Cie France  
80 Rue Taitbout  
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.  
11 West 42nd Street  
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Ltd.  
42 Queen's Road  
Bombay, India

## CEMENT REVIEW

(Continued from page 128)

### MIDWESTERN MANUFACTURER:

"Among technological progress are the following:

"Rapid air-quenching clinker coolers which promote more rapid and complete combustion of fuel along with better clinker quality and fuel savings.

"More extensive use of closed circuit grinding principles so as to avoid ultra fines and oversized particles in slurry production.

"Air-cooling of cement in closed circuit grinding systems promoting better setting time control of product.

"Use of long kilns with high r.p.h. and good fuel capacity.

"During the postwar period our productive capacity has increased 120 percent. (Clinker production in 1946 was approximately 1,800,000 bbl. while clinker production in 1955 will exceed 4,000,000 bbl.).

"We are presently constructing a new wet process plant with anticipated maximum clinker production of 1,250,000 bbl. per year. This new plant is scheduled to be finished in the summer of 1956. In addition, we are continuing to rehabilitate our existing plants. Such rehabilitation projects will not increase our capacity to any great extent, but should result in more efficient production. In addition, we plan to produce more portland blast furnace cement during 1956 than we produced during 1955.

"We believe that our increased production, coupled with expansion plans announced by other cement companies supplying our sales area, will satisfy the demand for cement during the next few years unless much faster action is taken on a national road building program than now appears possible."

### CALIFORNIA MANUFACTURER:

"We have lowered costs appreciably at our quarry through modernization of drilling techniques and through improvements in hauling rock. We have made pioneer use in the cement industry of a 10-in. diameter rotary drill which has made possible larger blast holes and faster drilling. We have reduced our cost of hauling rock through utilization of more powerful and more mobile truck units. In our burning operation we are working on better instrumentation for measuring kiln temperatures. In the finish mill end we have close-circuited all grinding to increase capacity and improve quality.

"Virtually all our recent increases in productive capacity have come through installation of additional kilns

and auxiliary equipment, with very little actual capacity increase attributable to new technology. Our 3rd and 4th kilns were completed, respectively, in 1946 and 1952, and our 5th kiln, now under construction, is expected to be completed in 1956. By that time, we will have quadrupled our capacity prior to 1945.

"In addition to our own current expansion, Permanente Cement Co., now building a new plant in Southern California, is also adding 1.4 million bbl. production to its Northern California plant. Ideal has announced a 1 million bbl. addition to its Redwood City plant. California Portland Cement Co. has just completed a new 2 million bbl. plant at Mojave, Calif., which will augment cement supplies in the southern part of our market. These expansions should obviate any possible cement shortage in this area. We not only expect these additions to take care of construction demands; we also believe they will probably result for some time in an oversupply of cement in Northern California."

### MULTIPLE-PLANT COMPANY:

"The principal technical advances during recent years in the direction of increased output and reduced cost have been the substitution of long kilns for short ones, the installation of equipment for preheating raw material in connection with short kilns, and the replacement of small grinding units with larger ones.

"Since 1945 the productive capacity of our existing plants has been increased approximately 20 percent. We have immediate plans for a further increase of 20 percent in the productive capacity of our existing plants, and are considering the building of a new plant which will result in an increase of approximately 50 percent since 1945.

"We anticipate that our plans for increased production along with those of many other cement companies will take care of the demands of our customers for some time to come."

### A SMALL SINGLE-PLANT COMPANY IN THE EAST:

"In the ten years 1946-55, this company was able to increase production by 105 percent at a cost of over \$2,500,000, including the addition of a kiln in 1948 and a finish mill in 1953. Our current program will provide a further increase over our 1955 capacity of about 73 percent, so that our capacity by the end of 1957 will be more than 3½ times the prewar production.

"This program is expected to cost about \$4,000,000, of which \$1,500,000 is represented by new equity capi-

tal, \$2,000,000 from borrowing and the remainder from company funds. By the end of 1957, the company's assets will be in excess of eight million dollars, compared with a little more than one million dollars at the close of 1946.

"In view of the fact that this recently completed sale of stock represents the third such sale since the end of World War II, we are entitled to think that this company has used every means available to it to keep abreast of the increasing demand for cement. Certainly the price-cost relationships that existed in the industry until very recently offered no encouragement for the investment in new facilities which was implied in the demand for our product. Our investment per man will show an increase from about \$7000 in 1947 to almost \$40,000 in 1957.

"All of the information which we have been able to accumulate points to the conclusion that the industry will not be able to fully meet the demand for cement in 1956. As has been true in the past, some areas will be better off than others, at least until very late in the construction season. In our immediate area, we think that the total demand cannot be met by existing facilities, including some new capacity which will come in next year.

"By the end of 1957, however, we expect an increase of production in our area of as much as 50 percent compared with 1955. This very great expansion should be more than adequate to meet the expected demand for sometime after 1957, possibly until 1965; and probably a sufficient portion of this new capacity will be in operation early enough in 1957 to preclude any shortages in the area in that year.

"Briefly, then, we believe that 1956, from the customers' viewpoint, will be as bad as, or worse than, 1955, but that the industry will be over the hump after next year."

### MEDIUM-SIZED EASTERN COMPANY:

"The air-quenching cooler was one change which definitely increased our kiln output. The preheater is an installation which we anticipate will definitely increase output and reduce costs.

"Our productive capacity has been increased 1,800,000 bbl. during the last few years. We anticipate a further expansion of 700,000 bbl. in the immediate future.

"Based on our experience in 1955 wherein we increased our overall output approximately 1,000,000 bbl., we do feel that our further increase in capacity will certainly take care of our normal customer's needs."

(Continued on page 136)

# New "B" Rear-Dump offers you big capacity **PLUS**



## High speed

B Tournapull Rear-Dump has forward speeds from 2 to 34 mph, plus two reverse speeds, 2 and 4 mph. Wide selection of speeds enable "B" to climb steep grades.

## Easy loading

Loading of new "B" is made easier by large "target" area of bowl. Its 17'8" length, 10'2" width, and 7'6" depth make it ideal for any size shovel. Rear of body provides wide, low entry for dipper to give extra speed advantage for the excavator. Big 35-ton capacity can make every load a profitable one.

## Fast dumping

At the touch of a dashboard switch, body raises to vertical position. Edge of bowl swings behind and below rear wheels so rocks cannot roll forward to lodge against wheels nor can material pile under rear end.

## 180° turn in 35' space

Two wheel prime-mover turns 90° right or left . . . machine in normal use makes non-stop 180° turn in space only 35' wide. With body in dump position, machine can turn 180° in only 27'. This maneuverability of "B" allows you to work in tight quarters where smaller conventional haulers often cannot go. Jockeying back and forth to get into loading position is eliminated.

## 7536 square inches of braking surface

Heavy-duty air brakes with 7536 sq. in. of braking surface improve maneuverability . . . add to operator confidence for faster operation on steep grades and narrow winding haul roads.

## New "B" also offers these additional features

- Big 7-ft. high 2-ft. wide low pressure tires for better flotation.

- Rugged body construction for longer equipment life.
- Simple, positive electric controls for fast, easy operating.
- Lower maintenance because there are no hydraulics, no long drive-shafts, no springs or spring hangers.

For more information on this big new "B" Rear-Dump see your Le-Tourneau-Westinghouse Distributor.



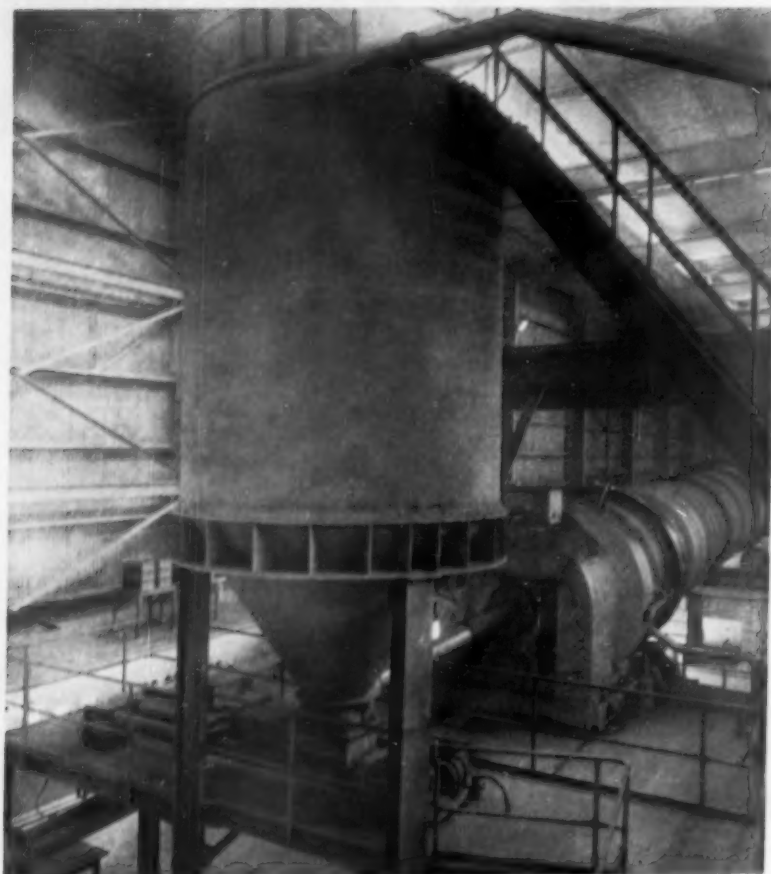
Tournapull — Trademark Reg. U. S. Pat. Off. BR-888-G-b



**LeTourneau-WESTINGHOUSE Company**

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company



Dust return installation at firing end of kiln at St. Lawrence Cement Co. plant

#### MIDWESTERN COMPANY:

"Our annual productive capacity of portland cement—Type I—for the past several years has been 2,200,000 bbl. In November of this year we completed the installation of additional facilities at one plant which will increase the capacity of that plant by 1,300,000 bbl. annually thus bringing our total annual productive capacity to 3,500,000 bbl. at the end of 1955.

"In addition, we are also constructing a new cement plant which we expect to have completed in September, 1956. This plant will have an annual productive capacity of 1,250,000 bbl. so that at the end of 1956, the total annual productive capacity of our company would be 4,750,000 bbl.

"In our opinion the increased productive capacity we and others have scheduled should provide total cement capacity sufficient to meet the current levels of customer requirements in the territories which we serve."

#### PACIFIC NORTHWEST COMPANY:

"There has not been a cement shortage in the Pacific Northwest, although it has been necessary to ship some

cement beyond the normal shipping areas of certain plants in order to avoid shortages in other areas.

"Due to the constantly increasing demand for cement in the Pacific Northwest, this company is now in the process of installing an additional kiln at one plant with a capacity of some 700,000 bbl. per year. We also have on order an additional kiln for another plant which will double the capacity of that plant. One new kiln will be in operation early in 1956 and will increase the capacity 50 percent. It is anticipated that the other kiln will be in operation by the end of 1956.

"The advances to provide for increased output and reduced costs are:

"1. Installation of kiln together with the required wet and dry grinding mills.

"2. Improved high pressure oil burner system.

"3. Installation of hammermill in rock crushing circuit to obtain increased slurry production.

"4. Unit coal firing system.

"Approximate productive capacity has been increased a total of 800,000 bbl. by plant expansion and improved operating technology."

#### MIDWESTERN MANUFACTURER:

"At one plant, a primary crusher has been placed on the quarry floor and the haulage system changed from hoist and cars to large trailers on rubber.

"Closed circuit grinding in both raw and finish departments have been added at both plants.

"New extra long kilns of large diameter, complete with modern instrument control, have been added at both plants.

"Cement storage silos with steel cone bottoms placed over loading tracks have been added to both plants to facilitate bulk loading.

"Shortwave radio has been added at both plants to service plant locomotives, quarry shovels, trucks, and various departments.

"During the period involved, plant capacities have increased 83.5 percent from 1946 to 1956.

"We are studying plans for further expansion, but no definite plan has been decided upon.

"We anticipate that we will be able to take care of our normal customer demands in 1956. Some of our difficulty this year was caused by the United States Navy building program, which had preference over our normal customer business."

#### OHIO MANUFACTURER:

"Improved operation by instrumentation and the addition of filter wheels for water reduction in slurry feed have been the major factors contributing to increased capacity and decreased costs. Productive capacity has been increased by 11 percent during the period covered.

"We are at present engaged in an expansion program that involves a new long wet kiln that should be producing by late summer of 1956. A 30 percent increase in capacity will be realized as soon as this kiln is operating. An additional 20 percent increase is planned as soon as the cement market indicates its need. We expect to satisfy our customers' needs as soon as the new equipment is producing."

#### SOUTHERN MANUFACTURER:

"High divisor has of course been the most potent factor in reducing costs. But we have been able to improve mill and kiln performance appreciably by close attention to details; mill ball loads, maintenance of uniform feed rates; kiln control to increase lining life without sacrificing good burning, etc. Nothing spectacular.

"Our capacity was increased 60 percent in 1950 by the addition of an

(Continued on page 140)



# 240-acre quarry

## proves rubber-tired tractor ideal for scattered work

Unit's 19 mph speeds  
cut wasted travel  
time by over 50%

▲ Multi-disc air brakes totaling 2822 sq. in. braking surface give operator confidence to work fast close to edge of dump.



▲ Instant-shift, plus 8 mph reverse, enables tractor to clean around shovel without delaying load cycles.

Stone does little damage to tires... tires do  
▼ no damage to tracks or pavement.



Five major tractor assignments face Columbia Quarry Company at their 240-acre limestone quarry near Columbia, Illinois.

1. Clean-up around a 6-yard production shovel (which loads 1,250,000 tons of rock yearly)...
2. Clean-up around two 3½-yard overburden stripping shovels...
3. Maintaining an overburden dump...
4. Maintaining a waste-rock dump...and
5. Maintaining at least 2 of the company's 15 crushed stone stockpiles each day.

These jobs, located from ½ to 1 mile apart, are handled efficiently with only one tractor—a high-speed Tournatractor!

This big 208 hp rubber-tired unit drives everywhere under its own power—on job-to-job moves, it often reaches 19 mph. Time studies show it averages 13 mph. This average speed is more than twice as fast as the top speed of a crawler-tractor formerly used on this work. Says Superintendent E. A. Heise, "We like this movability! Tournatractor sure gets around fast from one spot to another."

### Does 180 loads hourly

On the job, this same speed helps Tournatractor equal or better output records of crawlers. Cleaning the edge of the overburden dump, for example, Tournatractor regularly pushes a blade of truck-dumped rock and clay over the edge every 20 seconds. Push forward usually takes about 12 seconds...change to reverse gear, ½ second...return, 8 seconds. Each pass moves up to 2½ bank yards.

Tournatractor also has proved ideal for clean-up around the rock shovel. Rig is maneuverable and fast enough to do the work without interfering with the shovel cycle. On clean-up after shooting, it moves in fast and reduces lost waiting time to minimum.

### 1/3 the lubricating time

Columbia Quarry also report they save time on maintenance, too. It takes Operator Vern Kremmel just 15 minutes a day to lubricate the Tournatractor, compared to 45 minutes a day to lubricate a crawler-tractor. He says, "Tournatractor is easy to oil and grease. You don't have to get down into the mud to do any of the work, so you don't get nearly as dirty."

Why not investigate the high speeds, greater mobility, and lower maintenance Tournatractor can give. Call us to arrange a demonstration. No obligation.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-786-Q-b



## LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

# FULLER PREHEATER

Humboldt Suspension Type

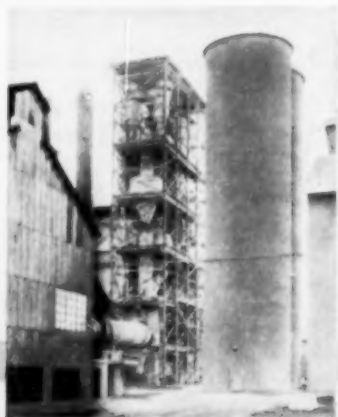
## High Capacity With ...first of 13 to be installed

### FULLER PREHEATERS INSTALLED\* OR ON ORDER

COMPANY	LOCATION	NO. OF PREHEATERS
*Allentown Portland Cement Company	Evansville, Pa.	1
*Alpha Portland Cement Company	Cementon, N. Y.	1
*Lehigh Portland Cement Company	Fogelsville, Pa.	1
North American Cement Corporation	Hagerstown, Md.	1
Huron Portland Cement Company	Alpena, Mich.	2
Nazareth Cement Company	Nazareth, Pa.	1
Medusa Portland Cement Company	Dixon, Ill.	3
Ideal Cement Company	Boettcher, Colo.	2
Whitehall Cement Manufacturing Company	Cementon, Pa.	1



Lehigh Portland Cement Company, Fogelsville, Pa. plant. Photo taken during erection. Now in operation.



Allentown Portland Cement Company, Evansville, Pa. plant. In operation.



Alpha Portland Cement Company, Catskill plant, Cementon, N. Y. In operation.

Key†	Starting Date	Kiln Capacity Before Preheater Bbl./Day	Kiln Capacity With Preheater Bbl./Day	B.t.u./Bbl. of Clinker Before Preheater	B.t.u./Bbl. of Clinker With Preheater	Temp. of Mat'l. From Preheater °F	Type Raw Material	Old or New Kiln	Kiln Size	Kiln Slope	Kiln Speed r.p.m.	% Capacity Increase	% Fuel Saving
1.	Nov. 1950	840	1200	995,000	641,000	1500°F	With 15-35% Slag	Old	8'-3" x 133'	3/4"	50	42.8%	33.3%
2.	April 1953	1250	1782	925,000	620,000	1238°F	Lime Marl	Old	9'-0" x 197'	3/4"	60	41.4%	35.2%
3.	May 1953	2058	2058	615,000	615,000	1300°F	Lime Marl	New	10'-6" x 133'	3/4"	60	New Kiln	New Kiln
4.	May 1953	900	1380	962,000	660,000	1317°F	Limestone, Clay	Old	8'-6" x 164'	3/4"	66	52.4%	31.2%
5.	April 1954	2280	2280	613,000	613,000	1470°F	Lime Marl	New	10'-6" x 133'	3/4"	72	New Kiln	New Kiln
6.	May 1953	860	1500	1,100,000	650,000	1432°F	Limestone, Cement Rock	New	8'-0" x 123'	3/4"	90	74.0%	41.0%
7.	May 1954	780	1200	995,000	650,000	1350°F	Limestone, Clay	Old	8'-3" x 164'	3/4"	36	53.8%	34.7%

† 1. Hardeutsche Hütte, Bremen-Osthausen. 2. Portland-Zementwerke, Anneliese-Ennigerloh, Westf. 3. Bomke u. Bleckmann, Beckum/Westf. 4. P.Z.W., Heidelberg AG Werk Burglengenfeld. 5. Portlandzementfabrik Hardegg AG, in Hardegg. 6. Allentown Portland Cement Co., Evansville, Penn. 7. "Terni" Società per l'Industria e l'Elettricità cementaria, Spoleto, Italia.

[Coolers in all plants are Fuller type.]

# High Thermal Efficiency

*by 9 leading cement companies*

After more than two years of closely studied operation the first American installation of a Fuller Preheater in conjunction with a short rotary kiln, at the Evansville, Penna., plant of the Allentown Portland Cement Company has achieved record efficiencies. Daily output has been raised from 860 bbl. (without preheater) to 1500 bbl. and fuel consumption has been reduced from approximately 1,100,000 Btu per bbl. to about 650,000 Btu per bbl. These astonishing results follow the pattern of those achieved in European installations where the preheater first saw service, and they all add up to very substantial savings in kiln operations.

Designed for existing as well as new short kilns, the Fuller Preheater makes the practical fuel-burning capacity of the individual kiln its only capacity limitation. If you're interested in cutting fuel costs and increasing output... if you're interested in sizeable dollars and cents savings... write for details as they apply to your plant operations.

## IT'S NOW AN ESTABLISHED FACT... The Fuller Preheater—

1. Makes effective use of kiln gases (otherwise wasted) to heat raw materials before they enter the kiln.
2. Increases clinker production while reducing exit gas temperatures to between 500°F and 600°F.
3. Greatly increases daily capacity.
4. Substantially reduces fuel consumption.
5. Acts to extend the life of existing short kilns.
6. No internal moving parts.



# Fuller

pioneers in harnessing AIR

**FULLER COMPANY, 102 Bridge St., Catasauqua, Pa.**

A SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORP.

Chicago • San Francisco • Los Angeles • Seattle • Kansas City • Birmingham

PR-27 1461

other kiln. We have gained potentially another 5 percent by the activities noted in the above. The potential will become dynamic with the completion this winter of new cement silos to hold 144,000 bbl.

"No immediate plans for expansion of our present plant but the possibility and desirability are being studied. We are well along with the packaging of a new plant project.

"The general feeling is that higher demand than present capacity will continue for some years. I am hopeful but, having gone through the early 30's, a little timid.

"We are on a treadmill; committed to the production of more and more goods and the paying of higher and higher wages to insure purchase of the goods. It is good fun. Let us hope we will not stub our toes."

#### CANADIAN MANUFACTURER (NEW PLANT):

"A third cement finish mill of the same capacity will be added this winter. It will be in operation for next year. This installation does not increase our production capacity but we will be able to cover the season peak.

"We have a new plant under construction in Toronto which will have the same capacity as the Quebec plant. On top of that, two other Canadian cement companies have expansion programs for 3 million bbl. more capacity and 0.8 million bbl. We feel that the Canadian market will be adequately supplied after these expansion programs are realized. The year 1956 might be critical, but in 1957 there should be sufficient production."

#### LARGE MULTIPLE-PLANT MANUFACTURER:

"We have been successful in continually increasing the output of our plants over the past few years by: (a) replacing obsolete equipment with larger and more rugged units as they have worn out, (b) making extensive use of instrumentation on our kilns, (c) studying maintenance records and working out programs of regular inspection of equipment so that we can anticipate potential breakdowns in time to minimize machine outage, and (d) making minor adjustments or improvements in our control of the kiln feed.

"During the nine-year period, January 1, 1946, to December 31, 1954, production had been increased 10-150,000 bbl. by the construction of new facilities, by expansion of existing plants and by improved technology.

"We are hopeful that the increased output as it becomes available at each of the locations now being expanded

will take care of our customer demands in these areas for several years into the future. Of course only time will tell whether we have properly evaluated this future demand as so much is dependent on the general trend of the national economy."

#### LARGE EASTERN MANUFACTURER (MULTIPLE PLANTS):

"The main technical advances made in recent years consist principally of progressive developments that permit a reduction in labor. The average size of crushers, kilns and grinding mills has increased and today many plants utilize 4000 bbl. per day kilns as compared to an average of less than 2000 bbl. per day kilns in years past.

"The raw grinding departments of wet process plants have been greatly improved, and combined drying and grinding units in compact form are now in general use.

"Dust suppression equipment and electric precipitators of improved designs have been added at many plants and also advances have been made in cement cooling equipment."

#### SOUTHWESTERN MANUFACTURER:

"From time to time during recent years we have made mechanical modifications and changes in our processing operations which have increased output and reduced costs. Of course, a sustained high rate of production has more effect on unit costs than any other single factor. For more than a year our clinker production has exceeded our so-called rated capacity. This has been possible because over the years we have worked toward eliminating weak spots in our production system.

"Within the past two years we have added two additional types of cement. About two years ago we commenced delivery of bulk and packaged cement via trucks. This has proven highly popular with our customers. Delivery time has been cut from days to hours. We were at some disadvantage with delivery by rail only, because our plant is on a port terminal railroad which necessitates considerable switching.

"Our clinker productive capacity has not been increased as a result of plant expansion. We have increased our kiln output by intergrinding our raw materials and reducing moisture content in the kiln feed. This is not technical but highly practical.

"We have no present plans for further increasing our clinker capacity. We do have under construction five additional cement silos (capacity approximately 90,000 bbl.) and a bulk cement barge loading dock.

"Our present cement storage capac-

ity has not been adequate to give us much 'cushion' for taking care of wide upswings in the market demand.

"We expect, for the foreseeable future, to be able to take reasonably good care of the customer demands in our immediate territory. Increased capacity by the mills near us should soon reduce the requests we get for 'out of area' shipments."

#### LARGE EASTERN MULTI-PLANT COMPANY:

"Application of planned maintenance programs at the plants have been helpful in increased production due to keeping the equipment in operation a larger portion of the time, resulting in decreased cost as well.

"Increased attention to recuperating heat from the clinker and from the kiln exit gases has resulted in increased kiln production at lower fuel costs.

"Larger unit equipment size in new construction and in plant rehabilitation has resulted in fewer men required per production unit and a greater fuel economy.

"The increased use of instruments—indicating, recording and automatically controlling—have frequently increased unit output and have almost invariably facilitated control of quality. Such instrumentation in many instances has reduced the number of operators that would otherwise be required.

"Substitution of unit coal mills for kiln firing have reduced costs by elimination of operators as well as improving working conditions by eliminating equipment difficult to maintain in a clean and safe condition.

"It is somewhat difficult to prognosticate on the possibility of our increased production being able to satisfy completely all of our customers in all of the areas we service. However, it is our earnest hope that supply and demand should be reasonably in balance by 1957. Indeed, it is quite probable that in some areas there may be a temporary over-production which would last only until demand grew to a point where it would be absorbed."

#### SMALL EASTERN MANUFACTURER:

"Since 1946 productive capacity has been increased by one-third.

"We are at present in the midst of an expansion program, which when completed will add 1,300,000 bbl. of clinker and finished cement capacity.

"We feel confident that by the end of 1956 we will have more than ample supply for customer demands."

#### SOUTHERN MANUFACTURER:

"We hope, by the end of 1957, to have a productive capacity two-and-a-

(Continued on page 144)



# **GYROSET VIBRATING SCREENS** **FOR** **SIZING — DEWATERING**



***POSITIVE ECCENTRIC ACTION***  
***POSITIVE STROKE ADJUSTMENT***  
**WITH ONLY 2 BEARINGS**

For scalping and for raw material sizing. A rugged two bearing positive eccentric screen. Adjustable as to stroke from 0 to  $\frac{3}{8}$ " for efficient economical service.

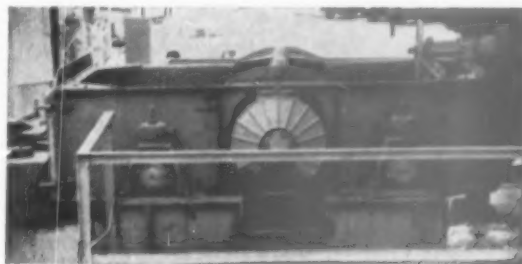
GYROSET Screens have a positive eccentric action giving a full circle throw thruout the length and width of the screen surface. They are two-bearing type providing minimum moving parts to give the required eccentric action.

GYROSET Screens can effectively scalp, size or de-water. Due to the adjustable action, the ability to operate at high speeds, and at any degree of pitch (or slope). GYROSET Screens can be readily adjusted as to action to give maximum volume for rough scalping—or can be adjusted to give the highest possible degree of efficiency in grading or in de-watering—at higher capacity than any other screening unit.

Electrically heated cloth can be supplied for damp operations.

Our "L & L" Cleaner will handle near-size blinding difficulties.

For slurry scalping, or any type washing or de-watering operations. Simple construction yet flexible in action. Size ranges from 18" to 72" in width and 4' to 16' in length—in one to three decks.



*Write for Literature*

## **PRODUCTIVE EQUIPMENT CORP.**

2926-28 W. LAKE ST.

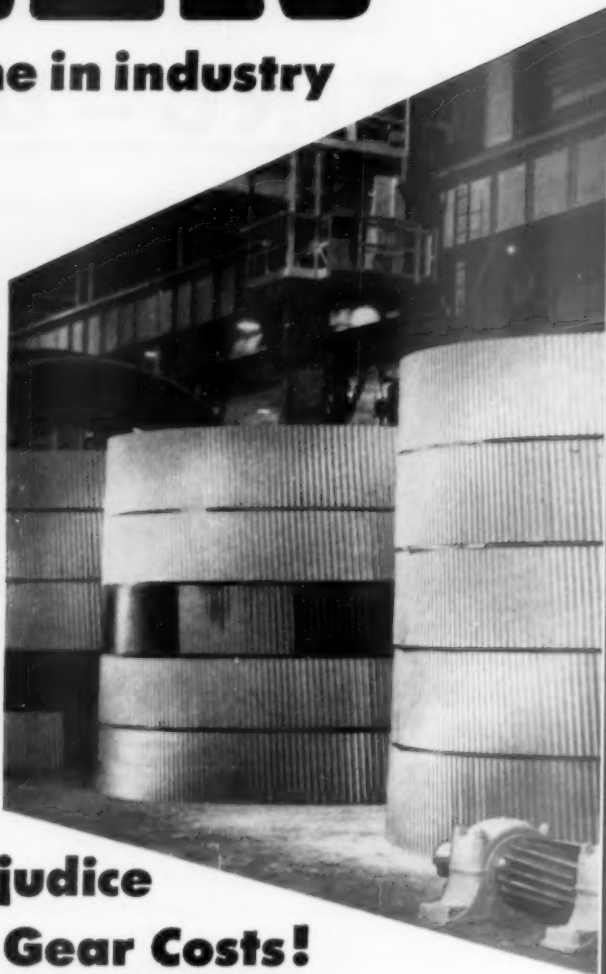
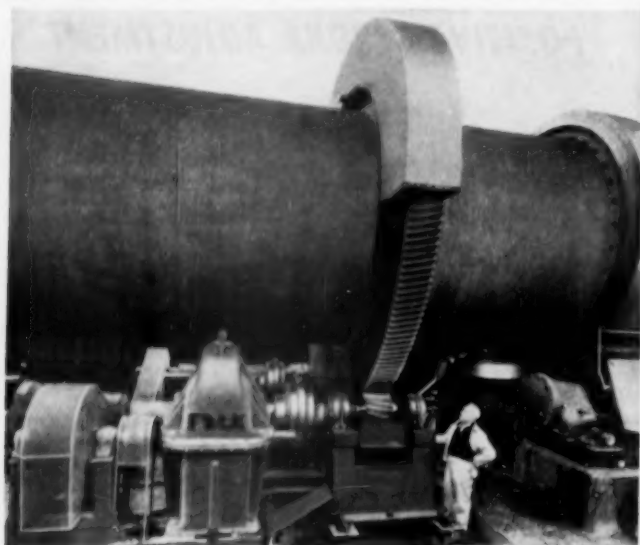
CHICAGO 12, ILL.

# Gears by **FALK**

**... a good name in industry**

**RIGHT:** Single helical ring gears being prepared for shipment.

**BELOW:** Falk tandem-drive speed reducers, couplings and single helical split ring gears, shown driving a cement kiln 11' 3" in diameter x 450' long.



## **Falk's Freedom from Prejudice Can Cut Your Gear Costs!**

It is false economy to use spur gears on applications which need modern helical gears. Further, it is a mistake to use a *double* (herringbone) helical where a *single* helical will serve more satisfactorily—or vice versa!

You'll find it good business to consult Falk—long-recognized leader in precision gear development—on your gear needs. For Falk is best equipped to recommend and produce the proper gear for any requirement—single or double helical, or spur—without prejudice! This freedom from bias is your assurance of getting the exact gear you need—and getting the maximum return from your gear investment.

Operators and engineers know that precision-cut Falk Helical Gears (with two or more helical-cut teeth

sharing the load at every instant) last longer, are less subject to destructive damage from ever-present abrasives than gears of any other type. Helicals wear *in*, instead of wearing *out*! Because of their higher possible ratios, helical gears permit use of higher-speed motors.

All this adds up to substantial savings: Your long-range gear costs are less because helicals last longer... you save on maintenance, prime-mover costs, power bills and floor space. Because power transmission is smoother, driving and driven machinery performs better, has longer life.

Consult the Falk representative nearest you for complete information... also, **write for Report 6170, "Advantages of Helical Gearing."**

**THE FALK CORPORATION . . . 3001 W. CANAL ST., MILWAUKEE 8, WISCONSIN**

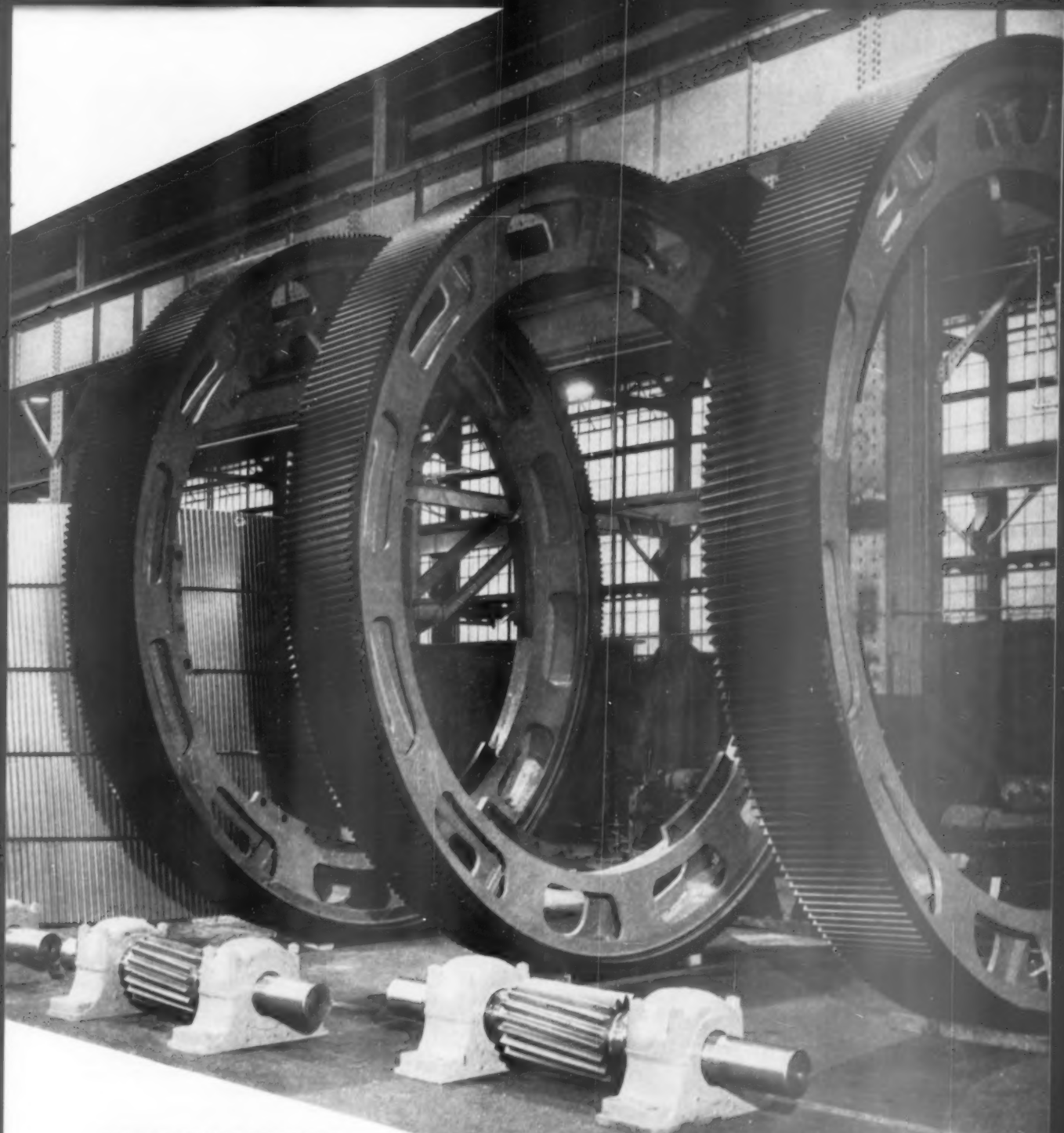
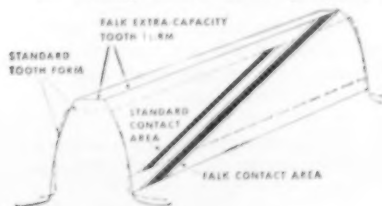
## GEAR FACTS FOR ENGINEERS

One factor determining gear rating is the amount of contact area (length and width) on teeth when engaged. With spur gears, the contact area is a narrow band, parallel with the axis of a single tooth. With helical gears, total

contact area is the sum of the oblique contacts over the face of two or more teeth. Thus helical gears have substantially greater capacity than spur gears.

The Falk Helical Gears offer a special extra-capacity tooth form. The extra capacity is obtained by cutting deeper teeth that are broader at the base than ordinary helical tooth forms. This results in the larger contact area and stronger tooth shown in the sketch. Years of

laboratory tests and thousands of actual field installations have proved conclusively that the exclusive tooth form of Falk single helical and herringbone gears provides substantially superior load-carrying capacity.



half times what it was at the close of the war in 1945.

"We are building with that purpose. We may fall short or we may overbuild but if the latter happens, we will not worry too much about it. We want to be able to supply our trade promptly."

#### EASTERN MANUFACTURER:

"We have been hard at improvement and expansion since 1952. You well know how much time these things take, no matter how you press them. In the past three years we have spent \$2,200,000 to improve the effective capacity of our plant and to prepare the way for expansion; we have another project, costing approximately \$1,100,000, which we hope to be completed about this coming April, and which, again, is a necessary preliminary to an actual increase in our productive capacity. And finally, we have orders and contracts placed for a kiln installation, with necessary appurtenances, costing approximately \$2,300,000, which will bring us an increase in cement production of about 35 percent. These facilities will not come into use until about October 1 of next year.

"Recent surveys indicate that by the end of 1956 our industry will have a capacity of about 370 million bbl., and other studies by the Bureau of Mines indicate a capacity of approximately 400 million bbl. by 1960. I am firmly convinced that this increased capacity will very quickly take care of customer demands, very possibly even in 1956, except here and there throughout the country."

#### LARGE CALIFORNIA MANUFACTURER:

"Some of our main technical advances during recent years for increased output and decreased costs are as follows:

"a. We have added a second shovel, additional quarry buggies, and a second quarry primary crusher.

"b. We have recently eliminated the use of our thickeners and classifiers by installing screens to close-circuit our raw mills.

"c. We have set up better controls over our grinding operations to keep mills loaded to capacity and to minimize overgrinding.

"d. We have enlarged our secondary crushing and screening plant to reduce raw mill feed size.

"e. We have greatly improved the brick life in our kiln-burning zones significantly reducing percentage downtime to around three percent.

"f. We have varied our mix where possible with special clay additives to improve burning and grinding characteristics.

"g. By nodulizing our recovered Cottrell dust and returning it to a single kiln, we have increased output about six percent through the increases in feed solids that were made possible.

"h. The installations of air-quenching clinker coolers a few years ago reduced costs and increased kiln output.

"i. We have installed cooling devices in connection with our finish-cement grind.

"j. Wherever possible, we have replaced screw conveyors with F-H airslides.

"k. We have entered the proprietary bulk-trucking business on a large scale."

#### CANADIAN MANUFACTURER:

"Technological advances made by the company have been many. Our quarries have been modernized by purchase of large electrical shovels and a change from rail to truck haulage, while larger and still larger grinding units and kilns have been installed throughout the plants, pointed towards ever increasing efficiency. Conversion from coal to gas and oil firing of kilns where possible has been effected with resultant improved operation. Downtime of all production units has been reduced to an absolute minimum.

"It is anticipated that in the summer production season of 1956 some local delays in cement shipments to construction sites may occur. However, with the unprecedented expansion of cement manufacturing facilities presently under way in eastern Canada and in the West, most of which will come into operation during the 1956 season, cement should be in very adequate supply for the 1957 season. We do anticipate that the production of cement in 1957 will be considerably ahead of the demand and sales will have to be stimulated to keep the expanded production units operating at full capacity."

#### Stress on Working Conditions

Aside from the major plant investments to increase capacity as such, many millions of dollars are represented in installations to improve working conditions and community relations, and to promote safety in plant operations. These investments, at a time when the industry has a serious financing problem, are deserving of special mention.

Dust collection is under constant study in cooperation with authorities on the subject, civic officials concerned with permissible dust concentrations and manufacturers of equipment. Our own observation is that more attention is paid to that problem than ever before. The trend in stack dust collection

is to use cyclone-type collectors followed in series by electrostatic precipitators for reasons of economics and, in some cases where alkalis are a problem, to permit recovery of the coarse fraction for return into the kilns.

Wetting agents and the application of water sprays are coming into more common usage at crusher discharge points and other points of transfer in material handling, and designs at transfer points provide for better confinement so that when dust collectors are in use they may be more effective.

There is wider use being made of so-called unit-type dust collectors located at sources of dust generation throughout a mill. More dust collectors are being used in connection with clinker coolers and high efficiency types are being installed for clinker dust removal from primary air pipes to unit coal pulverizers. In older installations, dust collectors are under constant study to improve their performance. Improved ventilation and the use of insulating materials are being provided in working areas for better air supply and lowered temperatures, as the industry seeks to make working conditions as desirable as possible.

Modern plant design provides that a plant be adaptable to good housekeeping and spaciousness to facilitate maintenance, with the utmost in protective devices. Extensive use is made of mobile equipment including fork lift trucks and tractor-mounted bucket loaders, power wrenches, electric hoists, palletized brick and bags to take the drudgery out of many operations and to improve efficiency. Mechanical sweepers within mill buildings and even outside in the plant area are coming into wider use.

Millisecond delays for blasting, to minimize vibration, drop balls to lessen noise, paved areas around plants and the renovation of old buildings and landscaping to improve the aesthetic appearance of plants are among the developments to build improved community relations.

Delivery trucks are being rerouted in some instances to minimize highway congestion and reduce automotive noise, and the industry, as part of its program of community relations, is taking more part in civic activities.

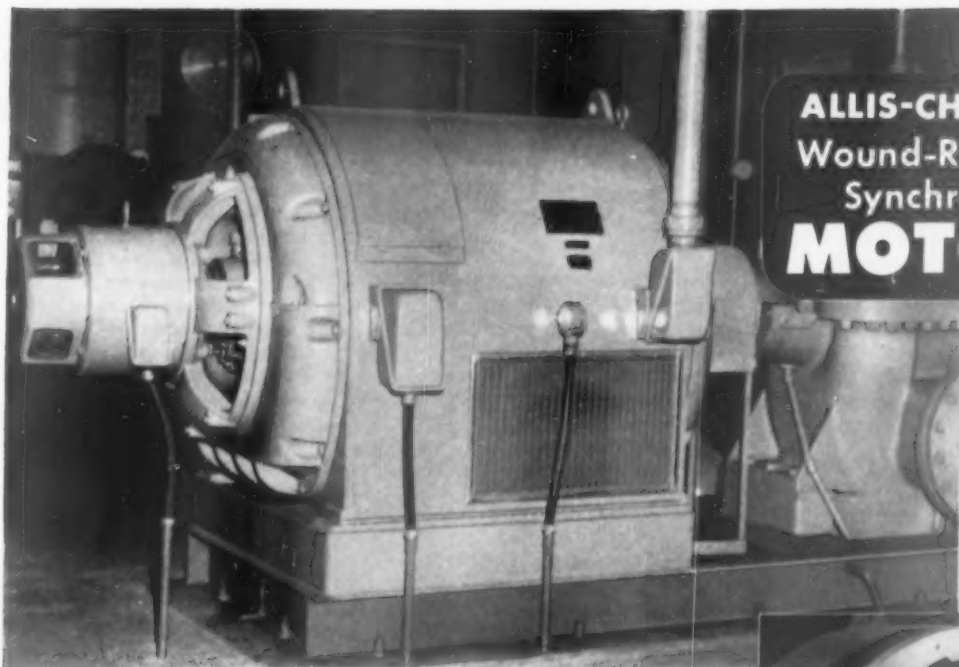
Among comments on this subject from cement manufacturers were the following:

"All of our plants have dust collection. During the past year we have installed new or improved dust collection at four plants."

\* \* \* \* \*

"During the past several years centrifugal mechanical dust collectors





## ALLIS-CHALMERS Wound-Rotor and Synchronous **MOTORS**

Shown is a 400-hp, 900-rpm end-shield bearing synchronous motor. Other Allis-Chalmers motors of this design are available from 250 hp at 300 rpm and up, in drip-proof and splash-proof construction.

## Now full protection without loss of accessibility

**All parts, including slip rings and leads, are enclosed — yet removable inspection covers and end-shield sections simplify maintenance.**

These motors combine modern functional design with maximum protection and accessibility.

*Here are some of the important features:*

- Collectors and brushes are protected by box-type stator yoke from physical damage, dripping moisture, dust and dirt.
- Cast end shields provide rigid bearing support and full protection for motor windings.
- Slip-ring leads are brought out to a terminal box — they are not left exposed.
- Capsule-type sleeve bearings permit inspection or cleaning of motor windings without exposing interior of bearing to dirt.
- Access covers are secured by easy-operating, self-locking fasteners for ready removal.

Get details — Call your nearby A-C office, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletin 05R8183.



Note accessibility offered by generous size opening covers. Upper half of end shield is removable for entrance to motor winding.



# ALLIS-CHALMERS

A-4847

ROCK PRODUCTS, January, 1956

145

have been installed on the kilns at both plants and other machinery has been equipped with filter-type dust collectors."

\*\*\*\*\*

"Our advances along the lines of dust collection and other activities to improve working conditions and community relationship have mostly been along the line of increased emphasis on general plant appearance and improved dust collection in the individual departments of our plants. Along this line I suppose it might be fair to say that the installation of long, wet process kilns at one of our plants has contributed appreciably toward decreased dust emission."

\*\*\*\*\*

"We have installed cyclones and electric precipitators and a number of other types of dust collectors to try to improve working conditions and dust problems."

\*\*\*\*\*

"We make use of mechanical (cyclone and bag) and electrostatic dust collectors at all points of dust emission to the atmosphere. We maintain close contact and cooperation with city officials to reduce dust emission below codes of health and safety departments. Use is made of wetting agents at points of material transfer to dampen material and avoid production of dust in material handling operations."

"Improved ventilation and use of insulating materials is provided in working areas to provide better air and lower temperatures where heat was excessive."

\*\*\*\*\*

"We have installed various types of cloth and cyclone collectors as well as an additional electric precipitator in various departments in our different plants. We are in the next few days starting operation of a new glass cloth filter collector at one plant."

\*\*\*\*\*

"Since 1946 the following advances have been made to improve working conditions and community relations:

"1. Bag-type dust collectors with a total capacity of 65,500 c.f.m. have been installed.

"2. An electrostatic-type dust collector with efficiency of approximately 95 percent was installed for elimination of dust from the kiln gases."

\*\*\*\*\*

"The crushing, raw, kiln, finish, and packing departments have all been equipped with modern dust collectors. Use of 'delayed time' blasting caps in our quarry has materially reduced shock caused by blasting. At one plant coal in storage has been covered with large tarpaulins which materially improves dust conditions in the plant and in homes immediately adjacent."

"We installed cyclone-type dust collector on our kiln stacks in 1950 and have had no dust complaints from outside since. In the plant we practice good housekeeping; maintain the dust collectors in good operating condition, including the suppression of all leaks. But we have not yet achieved perfection in our limestone storage and our bulk loading."

\*\*\*\*\*

"We have recently added dust collectors at points where we load bulk cement into trucks. This operation is now almost entirely dust free."

"We expect delivery next month of cyclone dust collectors for each kiln. The installation of dust collector equipment on our kiln exit gases should improve our community relations. This equipment installed will cost approximately \$100,000."

\*\*\*\*\*

"Since the close of World War II we have carried on an extensive and intensive campaign to improve the working conditions, appearances and housekeeping at all of our plants. Old buildings have been improved and renovated. We have made extensive use of concrete pavement in our plant yards and in the company-owned villages connected with some of our plants and we have purchased a lot of equipment such as mechanical sweepers, yard trucks and the like for use in maintaining our plant yards and buildings."

"In the period from January 1, 1954, to November 1, 1955, alone we have spent \$520,204.64 for dust collecting equipment at all of our plants. In the current expansion program we expect to spend many times this amount for dust control equipment on the new installations."

\*\*\*\*\*

"Our advances in dust collection and in the improvement of working conditions are somewhat comparable to the job of housekeeping. We have been at them constantly for years and especially since the close of the second war. Improvements have continued, but we are not yet satisfied with our dust collection experience. We have nothing to shout about. Working conditions are excellent. We have the confidence and good will of the people of our community."

\*\*\*\*\*

"New construction is carefully engineered to provide adequate dust collecting equipment to insure a clean atmosphere. In the selection and arrangement of new equipment, locations potentially dust producing are avoided insofar as is possible."

"We do continual research together with the manufacturers to evaluate new types of dust eliminating equip-

ment and to improve on existing equipment by experimenting with new fabrics and weaves in cloth-type collectors. In conjunction with our electrostatic precipitators, we do similar research on electrodes, rappers, etc."

"New quarry techniques, such as time delay blasting devices for primary shots and drop ball equipment for secondary breakage, have minimized the noise connected with quarry operations. Where these operations are near residential areas this has improved our community relations considerably."

"The use of new and improved tools and mobile equipment, such as fork lift trucks, tractor-mounted bucket loaders, power wrenches, electric hoists, palletized bricks and bags, have made a great improvement in working conditions and made the work a great deal easier for our employees."

"Much time and effort go into the safety and employee relation programs. Literature, visual aids, speakers, meetings and supervisors' training programs are used. All of these tend to improve working conditions and employee relations which in turn tend to improve community relations."

\*\*\*\*\*

"Some of the advances we have made in recent years with respect to dust collection, working conditions, and community relations are as follows:

"a. The adoption of our nodulizing process for returning all reclaimed dust to a single kiln has taken additional load off the kiln dust collectors."

"b. We have installed cyclone-dust collectors on all of our clinker cooler stacks."

"c. After much experimenting, we have revised the rapping cycles on our electrical precipitator to improve the kiln-dust-collecting efficiency."

"d. We have installed new bag-type collectors in crushing-screening plants and at bulk-cement loading points."

"e. We have pressurized our crusher and mill motor rooms."

"f. We have increased our quarry sprinkling activities, and reduced the size of our blasts."

"g. We have rerouted many of our cement delivery trucks to minimize highway congestion and reduce automotive noise."

"h. We have intensified our public relations program, particularly with respect to community relations and have encouraged neighbor plant tours."

"i. We have improved and enlarged our relationships with the local press and the county political bodies, and have taken more part in civic activities. We have increasingly stressed our large contribution to the local tax picture."

(Continued on page 148)

Holes are drilled at this limestone quarry with a Schramm Rotadrill — eliminating separate compressors and wagon drills. Mounted on a Schramm Heavy Pneumatractor, the Rotadrill has almost unbelievable maneuverability, goes almost anywhere.



ONE UNIT GIVES THIS PENNA. QUARRY:

## Clean, fast, inexpensive rock drilling anywhere

With the development of the new Schramm Rotadrill, rock drillers everywhere gain all the advantages of rotary rock drilling with compressed air. This comparatively new technique, originally developed in the oil fields, has been setting drilling records in almost every installation. It is believed that rotary rock drilling, with its advantages of clean, fast holes, fast set-up, and longer bit life, will completely replace the use of wagon drills.

Schramm's new Rotadrill on Pneumatractor is a complete, self-contained unit, self-propelled and self-powered. The unit can drill a 4¼" hole, or smaller, to a depth of 500 feet with 10,000 pounds down pres-

sure. Normal compressed air drilling pressures of 20-30 psi can be instantly increased for dewatering or breaking out blockages. Drilling controls are mounted in one complete bank, conveniently located for one-man operation. Standard Rotative Head has 75 RPM output and can be throttled down to complete stall while maintaining constant torque. Heavy welded structural steel mast, lowered for traveling between jobs, can be operated at various angles for sloping holes.

If you use wagon drills, you will find it worth while to investigate the Schramm Rotadrill on Pneumatractor. Send today for Bulletin PR-55. There is no obligation.



**SELF-PROPELLED.** The new Schramm Rotadrill is mounted on the Schramm Heavy Pneumatractor. Special weight boxes, dual wheels and the use of calcium chloride in rear tires add necessary weight to provide 10,000 lbs. down pressure. Schramm Rotadrill is also available truck mounted.



**CONVENIENT, SIMPLE CONTROLS.** Drilling controls are mounted in one bank, with pressure regulator and hydraulic gauge for controlling down-feed. Separate valves control each outrigger, forward and reverse rotations motor, slow downfeed, rapid downfeed and breakout cylinder.



**ADDING PIPE.** Fast vertical action of rotative head serves as pipe hoist for adding pipe or pulling drill string. Output spindle is flanged to take various drill pipe adapters.

Your local Schramm Dealer is listed in the Yellow Pages of your telephone directory.

# Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

645 North Garfield Avenue  
West Chester, Pa.

## Actual Capacity Increases

The foregoing comments on plant development and modernization cover technology and plant expansion generally. There have been various surveys made on the scope of new plant capacity being built which give some idea of the terrific plant program now underway.

A recent study by a cement manufacturer covers in detail the extent of capacity increases being made by the industry in an area of 19 states. The information is only partial but is interesting as being representative of one-third of the states in the nation. The survey shows that 25 percent additional capacity (31,277,000 bbl.) will become available in these states from January, 1955, through January, 1957. This compares with the national increase as pointed out in the forefront of this article.

The breakdown according to dates when the added cement will become available is 4,580,000 bbl. in 1955, 11,645,000 bbl. in 1956 and 15,050,000 bbl. at the start of 1957.

According to the compilation, increases in production, largely ready for delivery in 1956 and including January, 1957, are as follows:

State	Capacity in 1955 (bbl.)	Percent Increase	Total Capacity (bbl.)
Alabama	13,136,000	6	13,886,000
Arkansas	1,250,000	120	2,750,000
Georgia	1,000,000	18	2,150,000
Illinois	9,015,000	17	10,515,000
Indiana	12,260,000	30	17,260,000
Iowa	10,070,000	11	11,120,000
Kansas	9,360,000	22	11,460,000
Kentucky	1,900,000	17	2,225,000
Louisiana	4,500,000	70	7,300,000
Michigan	10,800,000	36	14,700,000
Mississippi	1,253,000	0	1,253,000
Minnesota	12,519,000	28	15,671,000
Missouri	3,400,000	65	5,600,000
Nebraska	13,240,000	36	18,010,000
Ohio	1,650,000	0	1,650,000
South Carolina	8,210,000	5	8,660,000
Tennessee	3,400,000	24	4,200,000
Virginia	810,000	0	810,000
West Virginia	2,000,000	65	3,250,000
Wisconsin			

Much has been published during the past year about specific projects and the following summary of plant expansion plans is taken from announcements published in ROCK PRODUCTS:

American-Marietta Co., which purchased The Standard Lime and Stone Co., is making a 750,000 bbl. increase to capacity at Martinsburg, W. Va.

Ash Grove Lime and Portland Cement Co. is modernizing the Chanute, Kan., plant where a new kiln is being installed and is tripling production at Louisville, Nebr. Completion is set for 1957.

The Bessemer Limestone and Cement Co. is scheduled to complete installation of a 12- x 450-ft. rotary kiln in 1956.

Calaveras Cement Co. is adding a fifth kiln in 1956 at San Andreas, Calif., to up capacity by 30 percent.

California Portland cement Co., completed construction of its new

\$12½ million, 2 million bbl. plant at Mojave, Calif., in August, 1955.

Canada Cement Co. has spent \$60 million on plant expansion since the end of 1946 and will spend an additional \$20 million by November, 1956. Capacity of the company's plants was 10 million bbl. in 1946. With completion of the new Winnipeg plant in 1955, annual production has increased to 19,250,000 bbl. Capacity at the end of 1956 will be 23,750,000 bbl., for a total of 137 percent over an 11-yr. period. Immediate plans include a new one-kiln plant at Woodstock, Ont., a new kiln at Winnipeg to triple capacity of this plant over a 3-yr. period, a new kiln at Montreal East which will increase production to 20,000 bbl. per day, a new clinker grinding and packing plant at Edmonton, Alberta, and increased clinker grinding capacity at Belleville, Ont.

Consolidated Cement Corp. is building a 1¼ million bbl. plant at Paulding, Ohio, scheduled for completion in 1956 and is increasing the Fredonia, Kan., plant by 1.3 million bbl.

Diamond Alkali Co., Standard Portland Cement Div., is making a 320,000 bbl. expansion at Painesville, Ohio.

Dragon Cement Co. has recently completed modernization at the North-

hampton, Penn., plant including expansion of one-third.

General Portland Cement Co. finished installation of new kilns at Dallas, Texas, and Houston, Texas, in 1955 increasing capacity by 1.4 million bbl. at each location. A white cement operation will be completed at Tampa, Fla., in 1956 and a 425-ft. kiln is scheduled to be installed at Chattanooga, Tenn. Capacity of the Fort Worth, Texas, plant will have been increased by 1¼ million bbl. early in 1956. Capacity of the company has been doubled since 1947.

Glens Falls Portland Cement Co., Glens Falls, N. Y., has a \$300,000 expansion program underway.

Giant Portland Cement Co. is increasing capacity by 1.2 million bbl. at Harleyville, S. C.

Hercules Cement Corp. is enlarging its plant at Stockertown, Penn.

Huron Portland Cement Co. is in

process of completing an expansion program at Alpena, Mich., which will increase capacity of the world's largest cement plant to 12 million bbl. in 1956. Two new kilns with suspension preheaters will come into production, making the addition of 12 kilns since March, 1948. This plant has been under constant expansion, involving all departments and distributing plants, as kiln output has continued to be increased.

Ideal Cement Co. had invested \$44 million since 1946 for new plants and equipment and will spend \$35 million additional for 1955 and 1956 expansion. A \$55 million appropriation for expansion had already been announced in ROCK PRODUCTS.

Included in the program are the building of new plants adjacent to the existing ones at Houston, Texas, Superior, Nebr. and Trident, Montana, with increases of 1,525,000 bbl., 1,300,000 bbl. and 1,300,000 bbl. respectively. The Houston plant will start operations in 1956 and the other two at later date.

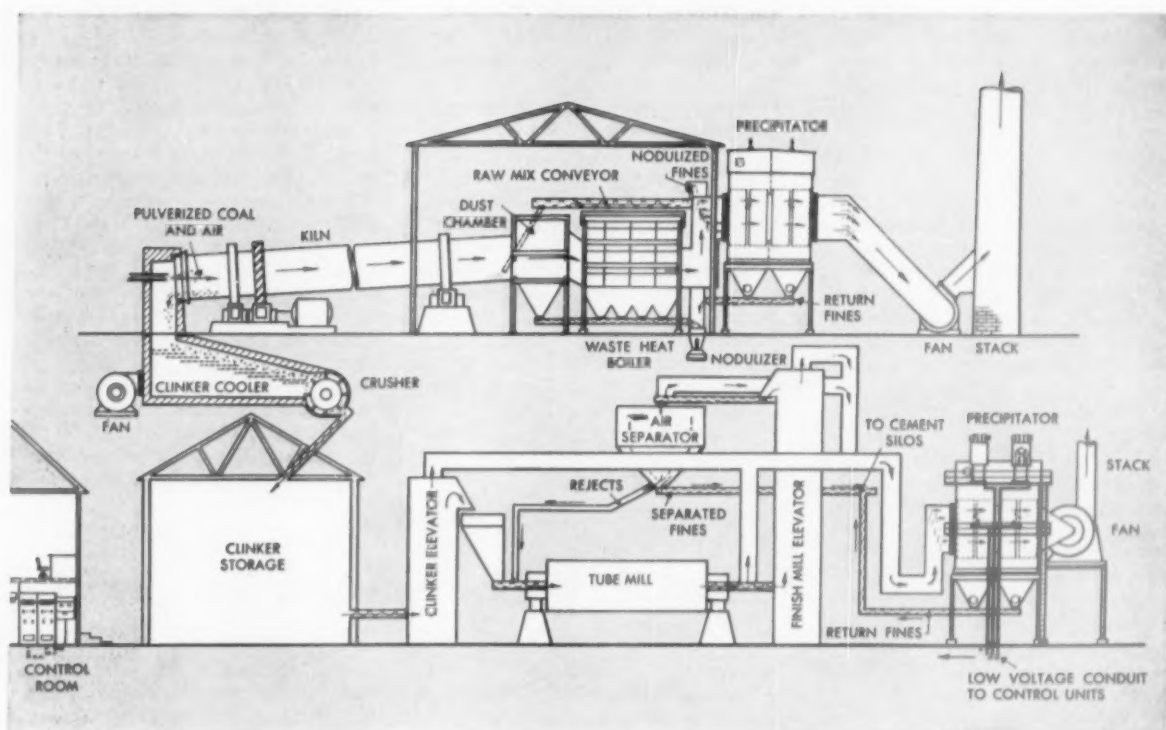
The Baton Rouge plant will be enlarged by 620,000 bbl. (completion expected in April, 1956), Okay, Ark., by 1,250,000 bbl. (August, 1956), Ada, Okla., by 1.4 million bbl. (July, 1956), Mobile, Ala. by 318,000 bbl. (this plant being completely remodeled with scheduled completion early in 1957), Boettcher, Colo., by 1,150,000 bbl. (July, 1956) and Redwood City, Calif., by 1.3 million bbl. (indefinite completion date).

Capacity will have been increased from 7 million bbl. in 1945 to about 31 million bbl. when the current program is completed.

Lehigh Portland Cement Co. will complete expansions amounting to 2.7 million bbl. in 1956. One is the complete rebuilding of the Union Bridge, Md., plant to up capacity by 2 million bbl. and the second is installation of a fourth kiln at Bunnell, Fla. About \$25 million will be spent in 1956 to complete the two projects and for modernization and construction at Metaline Falls, Wash., and Buffalo, N. Y. Capacity of the company will have been increased from 19 million bbl. in 1946 to 26½ million bbl. by the end of 1956. Some \$90 million will have been spent since World War II.

Lone Star Cement Corp. has underway an enlargement program involving six plants in addition to other enlargements recently completed and is building a new plant at Lake Charles, La. Upon completion of the current program, every domestic plant of the company has been or shortly will be enlarged and modernized. Late in 1956, upon completion of the program, total annual capacity of the





## How dust collecting problems are handled in the modern cement plant

The "why" of the Cottrell precipitator is well known to cement plant personnel—its use in nuisance abatement and cement dust salvage is well established. These diagrams explain the "how" of the Cottrell, including its familiar application to kiln gas and, more recently, its use in the ventilating system of the finishing mill.

### Kiln Gas

The upper half of the drawing shows a Cottrell for cleaning kiln gases. They are first passed through a dust chamber to the waste heat boiler and from there to the electrical precipitator, where the dust is removed. Salvaged dust is returned by conveyor to the process. The cleaned gas is discharged to the atmosphere through an induced draft fan and the stack. (Wet process kilns may also be fitted with Cottrells).

### And In The Finish Mill

Dust from the grinding mills has always been a major problem. The lower half of the diagram shows the recent application of the Cottrell for clean-

ing finish mill ventilating system gases. Cement dust is collected from the ventilating system serving the separators, conveyors and elevators. As before, recovered dust is returned to the process.

### Separating Small From Large Particles

When large particles of low alkali content must be separated from very small particles of high alkali content, an integrated mechanical-electrical precipitator will do the job effectively. The mechanical element handles large particles, and the electrical element collects the smaller particles that escape it.

### Rapping Puffs Eliminated

With Research-Cottrell's electronically controlled Magnetic Impulse Rappers, there is no need for rapping shutdown periods or dampers. Automatically controlled and operated, the MI Rappers continuously rap the electrodes throughout precipitator operation, thus avoiding dust re-entrainment in the gas stream and assuring optimum precipitator performance at all times.

### Many Design Advances

The MI Rapper is one example of many improvements that have taken place in the design of precipitators and their associated electrical equipment. Forty years of experience have provided Research-Cottrell with a rich store of engineering skill—it is this skill that has evolved the modern Cottrell precipitator, embodying a design based on knowledge gained through more than 2000 precipitators in many different fields. Fourteen of these have been installed or are under construction for cement plants. All of these precipitators were custom-engineered to individual specifications.

For a more complete description of the Cottrell precipitator, write to Research-Cottrell for Bulletin GB.

### RESEARCH-COTTRELL, INC.

A Wholly Owned Subsidiary Of Research Corporation  
MAIN OFFICE AND PLANT: BOUND BROOK, N. J.  
405 Lexington Ave., New York 17, N. Y.  
Grant Building, Pittsburgh 19, Pa. • 228 N.  
La Salle St., Chicago 1, Ill. • 111 Sutter  
Bldg., San Francisco 4, Cal.

Lone Star system will have been increased to 44.5 million bbl., of which 32.2 million bbl., or about 73 percent is in the United States. Seventeen million bbl. will have been added to the company's U. S. capacity.

The plants now being enlarged are Lone Star, Va. (800,000 bbl. increase), Nazareth, Penn. (900,000 bbl.), Spocari, Ala. (500,000 bbl.), Dallas, Texas (1.4 million bbl.), Houston, Texas (1.1 million bbl.) and Hudson, N. Y. (1 million bbl.). Capacity at Lake Charles, La., will be 2 million bbl. Cost of the current program is \$57 million for an increase of 10.2 million bbl. Total expenditures have been more than \$100 million over a 10-yr. period.

Longhorn Portland Cement Co., San Antonio, Texas, has just added a third kiln to up capacity by 700,000 bbl.

Marquette Cement Manufacturing Co. will have completed a \$16 million program by the end of 1956, adding 69 percent to annual capacity since 1945. The new Milwaukee plant will be completed in 1956, also enlargements at Cape Girardeau, Mo., and Des Moines, Iowa. Capacity had already been increased in 1955 by 500,000 bbl. at the Superior, Ohio, and Rockmart, Ga., plants.

Medusa Portland Cement Co. will have expanded the Dixon, Ill., plant by 1.5 million bbl. by the end of 1956. A new kiln is being installed at York, Penn. The company had already extensively expanded other operations since World War II.

Missouri Portland Cement Co. will have increased capacity at Prospect Hill, Mo., by one third in 1956. The Independence, Mo., plant capacity will be doubled by addition of a large kiln.

North American Cement Corp. is completing extensive enlargement and modernization at Howes Cave, N. Y., and Security, Md., in 1956.

Northwestern Portland Cement Co. has completed opening of a new quarry at Grotto, Wash.

Oregon Portland Cement Co. is adding kilns at Lime and Oswego, Ore., to increase capacity about one-third.

Peerless Cement Corp. will complete a new 1 million bbl. plant at Detroit, Mich., early in 1956.

Penn-Dixie Cement Corp. will have added one million barrel capacity at West Des Moines, Iowa, with installation of a new large kiln to be completed in 1956. The company also has an extensive program underway at the Petoskey, Mich., plant recently taken over.

Permanente Cement Co. will have enlarged capacity of its plant at Permanente, Calif., from 7 million to 8,400,000 bbl. by June, 1956, with an

expenditure of \$4 million. The installation involves a 12- x 450-ft. rotary kiln (6th), new grinding equipment and related facilities. Completion date for the company's new 2 million bbl. wet process plant in Southern California will be in the Fall of 1956. The plant will cost \$12 million.

South Dakota Cement Plant will up capacity by 900,000 bbl. with installation of a large kiln.

Southern Cement Co. (now American-Marietta Co.) is increasing its potential cement capacity by 50 percent at Roberta, Ala.

Southwestern Portland Cement Co. has a \$500,000 expansion program underway at El Paso, Texas.

Texas Portland Cement Co., Echo, Texas, is now building a new 1500 bbl. per day plant.

Universal Atlas Cement Co. will complete its 3 million bbl. project at Buffington, Ind., in 1956 and also the new clinker grinding and packing plant at Milwaukee, Wis.

Whitehall Portland Cement Co. has spent \$2.4 million in improving and enlarging its plant at Cementon, Penn.

The foregoing is by no means complete, only representing news about expansion already published in *ROCK PRODUCTS* during 1955. Other announcements were made in 1954. Among new plants, not mentioned above, are one projected at Ingersoll, Ont., Canada, and one being constructed by St. Lawrence Cement Co. to serve the Toronto market. Several new plants are under consideration in the United States, in California, Arizona, Arkansas and in New England.

## N.A.L.I. Convention Program

**N**ATIONAL AGRICULTURAL LIMESTONE INSTITUTE will hold its 11th annual convention on February 15 to 17 in Chicago at the Sheraton-Blackstone Hotel. The affair will be preceded by executive committee, individual committee, and joint committee meetings on the morning, afternoon, and evening, respectively, of February 13. The following day will be devoted to the Board of Directors meeting.

### Wednesday, February 15

The opening morning session will be devoted to business matters. Reports will be given by John H. Riddle, president; Alvin R. Armbrust, treasurer; Robert M. Koch, executive-secretary; and the chairmen of the various committees and regions. The Greeting Luncheon, presided over by L. R. Falk, St. Ansgar, Iowa, will feature an address by Mr. Koch entitled "A Quick Review and a Look Ahead".

A Panel on Promotion, the first of three panel discussions, will be held in the afternoon. Participants include Wm. F. Childs III (chairman), R. B. McNab, Wm. E. Hewitt, W. Dean Fyock, and Wm. E. Stone. Clyde Rapp, an advertising executive from Chicago, will lead off the panel, relating how advertising campaigns can be effectively translated into product sales. The Manufacturers Division, headed by E. C. Farrar, will also meet Wednesday afternoon. The evening program will include cocktails, buffet supper, and dancing.

### Thursday, February 16

This day is open so that members and guests can visit the combined Bi-

ennial Exposition of the National Sand and Gravel Association and National Ready Mixed Concrete Association at the Chicago Coliseum. N.A.L.I. members will be admitted free provided their N.A.L.I. badges are worn.

### Friday, February 17

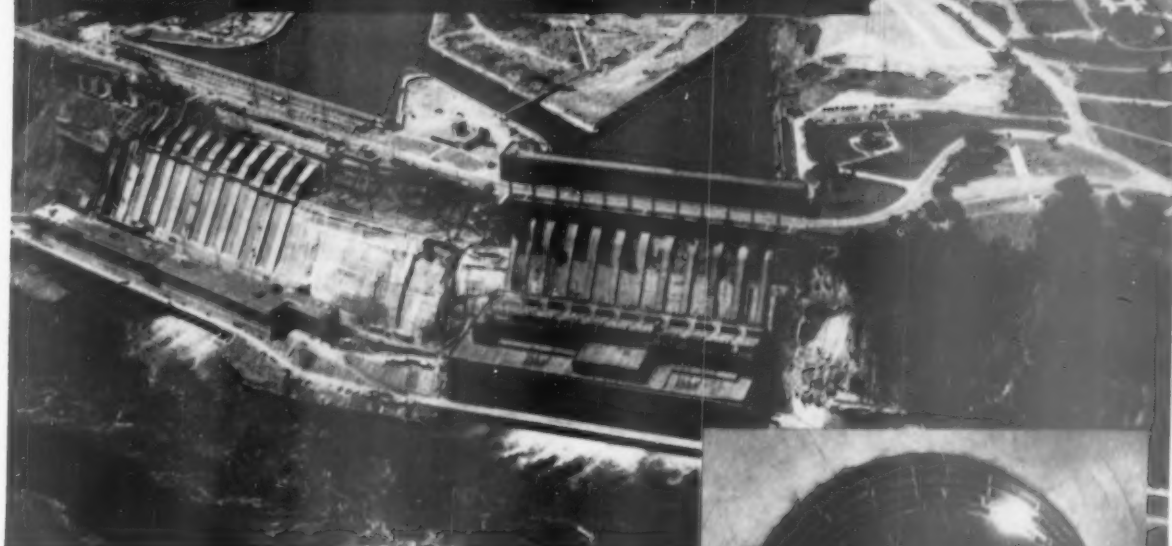
The Panel on Operations will be held during the morning session. Chairman Wm. S. Black, Black White Limestone Co., Inc., will start off with an operation film. Other participants include C. A. Broecker, Newton County Stone Co., Inc., Kentland, Ind., and W. D. Dillon, Dillon Stone Company, Columbus Junction, Iowa.

Assistant Secretary of Agriculture Ervin L. Peterson will address the luncheon group on the subject "Conservation—A National Need." Russell W. Hunt, Southwest Lime Company, will preside.

The afternoon session will feature a Panel on the Agricultural Conservation Program, in which five top U.S.-D.A. officials will participate. Each is a Commodity Stabilization Service Area director. These include Lester E. Leigh, (midwest area), Henry W. Soule (northeast), Hubert E. Dyke (northwest), Paul M. Koger (southeast), and James R. Lyons (southwest).

The annual banquet will be held in the Crystal Ballroom at 7:00 P.M., preceded by a reception. President John H. Riddle will preside, and Ralph G. Brooks, lawyer, junior college president, will give the banquet address entitled "From Abundance to Bondage".

## HARNESSING POWER FROM NIAGARA . . .

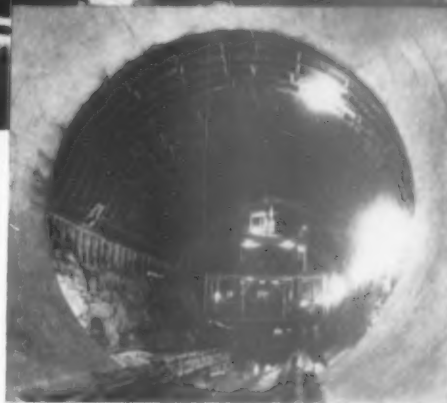


Above: Aerial view of the Niagara Project, with its great generating stations, penstocks and canals.

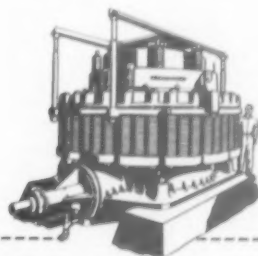
### SYMONS® CONE CRUSHERS produce specification aggregate for huge new Tunnel & Power Project

Three hundred feet below the fascinating Canadian City of Niagara Falls, one of the greatest tunnel jobs of all time was recently completed—part of the huge Sir Adam Beck Niagara Power Project built by the Hydro-Electric Power Commission of Ontario, to harness additional power from the Niagara River. Waterways for this modern project include twin concrete-lined tunnels, each  $5\frac{1}{2}$  miles long, with 45-ft. finished diameters, which will handle 15 million gallons of water per minute. Playing a major role in the essential production of specification aggregate for this record-breaking project were two  $4\frac{1}{4}$ -ft. Standard and one 3-ft. Symons Short Head Cone Crushers . . . another interesting example of the way Symons Cone Crushers profitably serve the construction industry the world over.

*Nordberg Mfg. Co., Milwaukee, Wisconsin.*



Tunnel section, with concrete lining completed. This lining averages three feet in thickness.



SYMONS Cone Crushers . . . the machines that revolutionized crushing practice . . . are built in Standard, Short Head, and Intermediate types, with crushing heads from 22 inches to 7 feet in diameter—in capacities from 6 to 900 tons per hour.



SYMONS  
GYRATORY  
CRUSHERS



GRINDING  
MILLS



SYMONS "V"  
SCREENS



SYMONS  
VIBRATING BAR  
GRIZZLIES  
and SCREENS



DIESEL ENGINES

C155

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**MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS**

NEW YORK • SAN FRANCISCO • DULUTH • WASHINGTON  
TORONTO • MEXICO, D. F. • LONDON • JOHANNESBURG

# N.S.G.A.-N.R.M.C.A. Program

• Sand and gravel, ready-mix producers to meet in Chicago, February 13-16. Exposition at Coliseum to be biggest in association history

**C**HICAGO WILL PLAY HOST to the 40th annual convention and biennial show of the National Sand and Gravel Association and the 26th annual convention and biennial show of the National Ready Mixed Concrete Association on February 13 to 16. The joint convention will be held at the Conrad Hilton, and the exhibition at the nearby Chicago Coliseum. The show will be the biggest in association history, with 108 companies displaying the latest equipment and methods applicable to both industries.

The convention will be preceded by two days of special committee meetings. On Saturday, February 11, the joint committee on safety and the N.S.G.A. board subcommittee on Proposal of the Hoover Commission to Impose a Toll Charge on Waterway Users will meet. The annual meeting of the board of trustees of the group insurance plan, the joint meeting of the executive committees of both associations, and the meeting of committees on nominations will be held on Sunday. A synopsis of the four-day convention follows.

## Monday, February 13

**MORNING** — Meeting of N. S. G. A. board of directors; also simultaneous meeting of joint subcommittee on cost accounting.

**JOINT LUNCHEON**—boards of directors of both associations.

**AFTERNOON**—Meeting of N.R.M.C.A. board of directors; also simultaneous comptrollers' conference and annual meeting of state and area association officials. The latter will feature talks by R. E. Hutchins, Paul R. Smith, Claude L. Clark, E. R. Booker, and H. J. Stockard, Jr., on the following topics: short courses, cooperation with allied industries in legislation, securing membership participation, collective bargaining on area basis, and activities of associations producing financial savings to members.

**EVENING** — Hospitality hour (6:00-7:30)

## Tuesday, February 14

**MORNING**—Simultaneous sessions

N.R.M.C.A.: Presidential address by Louis C. Schilling, and talks by Herbert G. Jahncke on "A Ready Mixed Concrete Producer Views the

Cement Industry" and Charles Baker, Universal Atlas Cement Co., on "Cement in 1956"; report of the committee on nominations and election of officers; and presentation of Pit and Quarry safety trophies.

N.S.G.A.: Presidential address by John W. Murphy, a report by E. K. Davison on the work of the public relations committee, a talk by Robert Mitchell on the planning by the Los Angeles zoning authorities for development of sand and gravel reserves; report of the committee on nominations and election of officers; and presentation of ROCK PRODUCTS safety trophies, with brief talks by winning companies.

**LUNCHEON**—Luncheon and style show for ladies of both associations at Marshall Field & Co.

**AFTERNOON**—A report by Ezra C. Knowlton on the national highway program; a talk by John T. Sapienza, association counsel, on the tax outlook for 1956; and "A Review of the Washington Scene" by Vincent P. Ahearn, executive secretary.

Simultaneous N.R.M.C.A. session on proportioning, testing and sampling concrete will also be held.

## Wednesday, February 15

**MORNING**—Simultaneous sessions.

N.R.M.C.A.: Operating problems, with talks by D. L. Bloem on "Factors Affecting the Flexural Strength of Concrete"; W. C. Hansen, Universal Atlas Cement Co., on "The Cause and Effect of False Set of Cement"; Stanton Walker on "The Association's Cement Testing Program"; and Harry Irwin, Warner Co., on "Producing Cooled Concrete."

Joint associations: Subject—Labor relations, with talks by William Moore, J. P. O'Connell Co., on "The Associations' Group Insurance Plan is a Good Investment for My Company"; Vernon Lohr, California Materials Co., on "How Group Bargaining in Los Angeles Contended with a Serious Strike in 1955"; K. E. Tobin, Jr., assistant executive secretary, on "The Industry Wage Pattern in 1955"; and a panel discussion of labor negotiations in key areas in 1955. Members of the panel will be Norman J. Fredericks (Detroit), R. F. Powell (St. Louis) and J. A. Nicholson (Toledo).

**JOINT LUNCHEON** — (beginning at 12:30 p.m.) Address by Douglas McKay, Secretary of the Interior.

**AFTERNOON**—Open for visiting the Biennial show at the Coliseum; also organizational meeting of the new N.R.M.C.A. committee on public relations.

## Thursday, February 16

**MORNING**—Simultaneous sessions.

N.S.G.A.: Operating problems, with talks by E. L. Schoemaker, Warner Co., on "Classifying Sand with Water"; J. Henry Law, Western Indiana Gravel Co., on "Removal of Lightweight Particles from Gravel by Jigging"; F. C. Sturges, Pennsylvania Drilling Co., on "Prospecting for Sand and Gravel With Well Drilling Equipment"; and an open forum discussion of operating problems entitled "Tricks of the Trade," based on answers to questionnaire distributed to the membership. Subjects include screen blinding, wire cloth vs. perforated plate, chute lining materials, avoiding segregation, etc.

N.R.M.C.A.: Merchandising session. Talks by Stanton Walker on "Points to Check before Selling on Basis of Guaranteed Strength"; E. J. Nunan, Buffalo Slag Co.; and Ross Wilcox, Portland Cement Association, on "A Cooperative Program for Promoting Ready-Mixed Concrete for City Street Paving." There will also be a panel discussion on merchandising practices in the ready-mixed concrete industry with audience participation, the members of the panel being Messrs. Quentin W. Best, Los Angeles, J. G. Goodner, Oklahoma City, F. E. Schouweiller, Fort Wayne, and J. B. Donovan, Springfield, Mass.

**AFTERNOON**—Simultaneous sessions.

N.R.M.C.A.: Talks by W. H. Goetz, Purdue University, on "Effects of Crushed Sand on Stability of Asphaltic Concrete Mixtures"; Stanton Walker, director of engineering, on "Brief Review of Progress in Aggregate Specifications and Tests Methods"; Rockwell Smith, Association of American Railroads on "Gravel as Railroad Ballast" and John E. Burke, Illinois Division of Highways, on "Sawed Joints for Concrete Pavements."

Joint associations: Talks by Charles A. Horsky on the Wage and Hour Law; Ernest Jennes, Covington and





# *Shovel-Crane owners!* **Working a hard 8 hour day... getting only 6½ hrs. output?**



**Operator fatigue can cost you important money. Here's how to minimize it!**

**T**HINK about the job you're working now. How much *more* money could you make if operators—good as they are—suffered little if any end-of-the-shift-letdown . . . never had to climb out and unlumber "cramping" arm and leg muscles?

**Fingertip-operated Link-Belt Speeder  
power hydraulic controls minimize fatigue**

With Speed-o-Matic—the true power hydraulic control system—shovel-crane response is fast, positive, easy. So easy that operators are actually "eager" to push the rig to its limit—all shift long! And what a limit!

You've never seen any machine that can com-

pare with a Link-Belt Speeder for cat-quick agility and long-lived, bulldog stamina. Report after report shows these rigs account for up to 25% or more output per shift.

#### **Seeing is believing**

The precision construction, the quality materials and the advanced engineering that have gone into today's Link-Belt Speeder speak for themselves. All we ask you to do is see your distributor and judge for yourself. Be as critical as you like! No shovel-crane on the market today—crawler or rubber-tired, ½ to 3-yd, 8 to 60-ton capacity—can compare. Visit your distributor today or write for literature—LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA.

## **LINK-BELT SPEEDER**

*Builders of a complete line of crawler  
and rubber-tired shovel-cranes.*

Burling, on "Eligibility Standards for Use of Industrial Radio"; and a panel discussion on the use of industrial radio in sand and gravel and ready-mixed concrete operations, with the panel consisting of Messrs. William J. Hicklin, Jr., Jacksonville, Fla., Russell P. Mumford, Springfield, Ohio, M. Eugene Sundt, Albuquerque, N. M., and James Sadler, Richmond, Va.

\* \* \* \* \*

## N.S.G.A.—N.R.M.C.A. Exhibit

### Adams Division, Letourneau Westinghouse Co.

Westinghouse transit mixer, representative of a line  $4\frac{1}{2}$ - to  $6\frac{1}{2}$ -cu. yd. mixers introduced recently under the Westinghouse name.

### Allis-Chalmers Manufacturing Co.

New bolted-type Model AVS (Aero-Vibe) 4- x 10-ft. three-deck screen, equipped with automatic stop control; two-dimensional working model of gyratory crusher with Hydrosert mechanism; pictorial display of grinding mills for manufacturing sand, with samples; data on lightweight aggregate manufacturing; slurry pumps; motors; Tex-rope driven; also Buda diesel power unit and 15 kw. diesel-generator set; also tractor division represented.

### American Manganese Steel Division

Diamantled 10-in. spherical bearing, "Counter-flow" Amaco pump, a worn pump shell made from HC-250 (a new alloy with a high wear record), and an Amaco magnetic flux semi-automatic welder.

### American Steel & Wire Division (U. S. Steel Corp.)

### Autolene Lubricants Co.

Protex air entraining solution, new Protex curing compounds, concrete testing equipment.

### Baldwin-Lima-Hamilton Corp.

Lima 24 ( $1\frac{1}{2}$ -cu. yd.) shovel and an Austin-Western 61-E single pass portable crushing plant.

### Barber-Greene Co.

Colored photo murals and 8 x 10 transparencies of typical installations; also B. G. belt conveyor carriers.

### Blow Knox Co.

### (Construction Equipment Division)

New  $6\frac{1}{2}$ -cu. yd. Hi-Ioy Truckmixer; also manual on automatic and semi-automatic bin and batching equipment.

### Burkhart Engineering Associates, Inc.

Consolidated Duo Boiler (1500 series) as set up for installation in ready mix plant; also new steel alloy A-39 stainless steel baffles for placing in the rectangular flues of the unit.

### L. Burmeister Co.

Automatic scale, complete with bucket elevator, gates, etc., and 3-cu. yd. central mixer, in operation.

### Butler Bin Co.

Complete operating automatic batching set-up with lighted control panel for aggregates, cement, and water; also 4- x 20-ft. mural highlighting construction industry.

### C. & W. Sales Co., Inc.

New electronic moisture meter for determining moisture of sand and gravel in bin.

### Calcium Chloride Institute

Photographs and technical literature showing applications of calcium chloride in concrete.

### Caterpillar Tractor Co.

New No. 955 Traxcavator, D318 diesel-electric set, D6 tractor with hydraulic bulldozer, and cutaway of D318 engine.

### Chain Belt Co. (Rex Construction Machinery Division)

Two Rex Adjusta-Wate Moto-mixers, featuring necessary components and accessories.

### Challenge Manufacturing Co.

New Challenge Pacemaker  $4\frac{1}{2}$ -cu. yd. transit mixer; new design engine take-off.

### Chicago Fly Ash Co.

Also will represent Detroit Edison Co., Atlas Fly Ash Co., and G. & W. H. Corson, Inc. Emphasize workability which fly ash imparts to concrete due to particle roundness. Center panel will show cement and fly ash particles magnified 400 times. Also installation photos.

### Clark Equipment Co., Construction Machinery Division

Michigan tractor-shovels

### Cleaver-Brooks Co.

CB 80-B, hp. boiler, with background display incorporating installation photos and a large translite showing cutaway of new boiler.

### Concrete Publishing Corp.

### Concrete Transport Mixer Co.

Rocket revolving and Hi-Lo stationary mixers.

### Construction Machinery Co.

New Model 600 and Model 400 Transcrete transit mixers, together with photos.

### Continental Motors Corp.

Late model cutaway diesel, gasoline, and LPG engines; fluid coupling and hydraulic transmission; and display of service packaging.

### Contractors and Engineers

### Cook Bros. Equipment Co.

Same as Challenge Manufacturing Co.

### Deister Machine Co.

Heavy duty 4- x 12-ft. Type UHS Deister double-deck screen in operation, featuring new adjustable slope screen panels at feed and discharge ends; photos of job installations.

### Dewey and Almy Chemical Co.

Feature use of Dares AEA (controlled air entraining agent), Daracone (water repellent), and Daraweld (bonding agent); also animated air entraining admixture dispenser exhibit.

### Diamond Iron Works (Div. Goodman Mfg. Co.)

Illustrated literature and photographs, describing complete line of Diamond products.

### Dodge Division, Chrysler Corp.

### Eagle Iron Works

Unique animated diagram of typical washing aggregate plant mounted on 8- x 20-ft. board, showing flow of material through various sections by means of lights. Also samples of aggregates, and an Eagle breaker ball.

### Erie Strayer Co.

### Euclid Division

### (General Motors Corp.)

Pictorial display showing application of Euclid products.

### Flexible Steel Lacing Company

A 24-in x 20-ft. conveyor fitted with various belt fasteners and belt lacings; also demonstration of new products—Rema self-vulcanizing rubber repair materials for belting and Flexco speed tools for applying belt fasteners.

### Food Machinery & Chemical Corp.

### General Electric Co.

### George Haiss Mfg. Co., Inc.

### (Div. of Pettibone Mulliken Corp.)

Job photos and literature describing Haiss bucket loaders.

### Hardy Scales Co.

### HarriSteel Products Co.

Various types and constructions of HarriSteel screen cloth, including Wabby Weave.

### The Heltzel Steel Form and Iron Co.

Displaying unannounced newly developed equipment for ready mix field.

### Hendrick Manufacturing Co.

Various types of perforated metal screens, including flat and flanged lip; also wedge slot and wedge wire screens.

### Hercules Motors Corp.

Several new series of 4- and 6-cylinder industrial engines.

### Hewitt-Robins Inc.

New 24-ft. "Hi-G" vibrating screen, Super Raynile conveyor belt, screen cloth, woven wire belt, rubber hose, Robintron bin level indicator, Jones speed reducer and pillow blocks, and display of engineering services.

### The Frank G. Hough Co.

HAH (1 cu. yd.) front wheel drive and HH ( $1\frac{1}{2}$ -cu. yd.) 4-wheel drive Payloader tractor-shovels; backdrop showing various job applications.

### Hoyt Wire Cloth Co.

Various size samples of different constructions, weaves, and edge preparations of wire cloth, including Supertough, Abraso, and Stainless Steel wire; will distribute combination opening and wire gauge.

### Imperial Construction Equipment Co.

Indicating Tel-A-Slump meter and combination indicating recording unit; also combination unit for individual truck mixers.

### Instant Moisture Control

### (Div. Colo. Pre-Mixed Concrete Co.)

Recording and non-recording Instant Moisture Control instruments, the latter recently introduced.

### International Harvester Co.

Model SF180 dump truck and lightweight six-wheeler truck for transit mixer.

### Iowa Manufacturing Co.

Working models of Cedarapids double-impeller impact breaker and double deck vibrating screen; plastic model and full size Cedarapids-Schrock motorized head pulley; animated display of impact breaker using colored balloons; transilites and photos of equipment in the field.

### The Jaeger Machine Co.

Model 3½ HM-E 1956 truck mixer featuring improved end loading mechanism, 3-speed transmission, etc.; Model 5½ HM-D 1956 truck mixer; two operating models of the new 3-speed power-transmission assembly; also movies and exploded transparent photos.

### Jeffrey Manufacturing Co.

New 75-t.p.h. heavy-duty automatic jig for removing lightweight deleterious materials from sand and gravel.

### The C. S. Johnson Co.

Johnson automatic batch recorder and water batcher.

### Kensington Steel Co.

Kensington-Oro alloyed manganese steel replacement parts for crushers, shovels, and tractors. Including sand drag, cutter, and elevator chain; renewable tooth chain sprocket; elevator buckets; shovel treads and dipper teeth; renewable tip hammers and grate section for pulverizer. Also running exhibit of tractor rail and grouser plate.

### Koehring Co.

Dumpton (4-cu. yd. capacity) and Model 405 Excavator with 20-ton lift capacity.

### Link-Belt Co.

A 36-ft. operating belt conveyor; an operating CA (concentric action) vibrating screen for medium and heavy duty scalping and sizing; and displays of conveying and power transmission equipment.

### Link-Belt Speeder Corp.

Transparent operating model of Speed-a-Matic power hydraulic system, showing complete operation; also color application photographs of several new crane-shovels.

(Continued on page 172)

# ***It's usable horsepower that counts!***



**Internationals give you power without strain at safe, economical rpm to save you the BIG money!**

**Rated horsepower figures** don't tell the whole story of truck performance.

Wise truck buyers want to know *more* than rated horsepower. They want to know what actual *usable* horsepower they are going to get to pull capacity loads at normal, legal speeds—without undue engine strain.

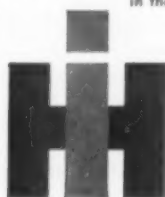
*Usable* horsepower—that's the point to keep in mind when buying trucks.

INTERNATIONAL engines deliver high usable horsepower at economical, wear-reducing speeds. Because they are built for use in *trucks*, with no compromise with passenger car design.

You get the usable power you need, plus longest truck life, every driver comfort and convenience. See your INTERNATIONAL Dealer or Branch for trucks exactly right for your job—all-truck built to save you the BIG money.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

**INTERNATIONAL®  
TRUCKS**



**All-Truck Built to  
save you the BIG money!**

Motor Trucks • Crawler Tractors • Industrial Power  
• McCormick® Farm Equipment and Farmall® Tractors

Many passenger car type truck engines have to rev up to high speeds to pull their loads. They strain at the job—cost big money in wear and repair. INTERNATIONAL all-truck engines turn at relatively low rpm—deliver high usable horsepower at normal road speeds, for peak performance, long life, BIG money savings.



In the world's most complete truck line, there are trucks for every job. More than 200 basic models from 4,200 to 90,000 lbs. GVW—conventional and COE, 4-wheel, 6-wheel, four-wheel-drive—in thousands of variations for exact job specialization.

# N.C.S.A. Convention Program—Exhibits

**THE 39TH ANNUAL CONVENTION-EXHIBITION** of the National Crushed Stone Association will be held February 19 to 22 at the Conrad Hilton, Chicago, Ill. Two of the six sessions will be set aside for inspection of the Manufacturers Division Exposition. A description of the exhibits is included herein.

## Sunday, February 19

Registration from 9:00 a.m. to 5:30 p.m. Meeting of the N.C.S.A. board of directors and the Manufacturers Division board of directors. Registration will continue on succeeding days.

## Monday, February 20

**MORNING** — Moving picture, greetings from President T. C. Cooke, a report of elections by board of directors, reports of engineering director A. T. Goldbeck, field engineer J. E. Gray, and administrative director J. R. Boyd, and talk on "Highway Legislation — What Happened and What's Ahead" by Arthur C. Butler, director, National Highway Users Conference, Washington, D. C.

**GREETING LUNCHEON** — Presentation of N.C.S.A. safety contest awards by H. H. Kirwin, chairman, N.C.S.A. Accident Prevention Committee, Eastern Rock Products, Inc., Utica, N. Y., and talk "Let's Get Personal" by George A. Bowie, businessman, author, Michigan City, Ind.

**AFTERNOON** — Inspection of exhibits (2:30 - 6:00).

**EVENING** — Cocktails, dinner, and dancing (informal), starting at 6:30.

## Tuesday, February 21

**MORNING** — Moving picture, followed with a discussion of operating problems by operating men and equipment manufacturers. Problems discussed include:

- Rock breakage by explosives
- New developments in drilling and related explosives problems
- Methods and operation of surge pile storage
- Methods of centralizing electrical controls for labor saving
- How we avoid overloading and spillage in highway haulage.

**MANUFACTURERS DIVISION LUNCHEON** and annual business meeting. (For members of Manufacturers Division only).

**AFTERNOON** — N.C.S.A. Committee reports, talks on "New Developments in Concrete" by G. D. Kennedy, president, Portland Cement Association, Chicago, Ill., and "Signifi-

cant Developments Regarding Insurance Subrogation Problems" by Warren C. Rowe, chairman, N.C.S.A. subrogation committee, Rowe Contracting Co., Malden, Mass., followed by discussion.

**EVENING** — Open for individual plans.

## Wednesday, February 22

**MORNING** — Inspection of Exhibits (9:00 - 12:00).

**GENERAL LUNCHEON** — "Report on Europe." Eddy Gilmore, Associated Press foreign correspondent, former chief (11 years) of A.P.'s Moscow

Bureau will be the main speaker.

**AFTERNOON** — Talks on "Designing Flexible Pavements for Strength—Not Thickness" by R. C. Herner, Bureau of Yards and Docks, U. S. Navy, Indianapolis, Ind., and "Most Recent Developments in Percentage Depletion" by John F. Lane, Gall, Lane and Howe, Washington, D. C., general counsel for N.C.S.A., followed by discussion.

**EVENING** — Reception (at 6:00) followed by annual banquet and talk "Two Plus Two Aren't Always Four" by Tom Collins, humorist, philosopher.

## EXHIBITORS

### Allis-Chalmers Manufacturing Co.

Booth 59

New bolted-type Model AVS (Aero-Vibe) 4- x 10-ft. 3-deck enclosed screen, equipped with automatic stop control; two-dimensional working model of gyratory crusher with Hydrosert mechanism; pictorial display of grinding mills for manufacturing sand, with samples; data on lightweight aggregate manufacturing; slurry pumps, motors, and Texrope drives; Tractor division also represented.

### American Cyanamid Co. Booth 39

### American Manganese Steel Div.— American Brake Shoe Co. Booth 21

Dismantled 10-in. Amasco pump; worn pump shell made from HC-250 (a new alloy with a high wear record); also Amasco MF semi-automatic welder.

### American Steel & Wire Division Booth 26

### Atlas Powder Co. Booth 45

Movies and 3-D color slides illustrating Rockmaster m.s. delay blasting system (slides were taken with new Atlas stereo sequence camera); also cartridges, caps, new Shotmaster condenser discharge blasting machine, and other accessories.

### Baldwin-Lima-Hamilton Corp.— Construction Equipment Division Booth 38

Lima 24 (½-cu. yd.) shovel; also Austin Western 61-E single pass portable crushing plant.

### Barber-Greene Co. Booth 3

Colored photo mural and 8 x 10 transparencies of typical installations; also B. G. belt conveyor carriers.

### Boston Woven Hose & Rubber Co. Booth 66

### Brunner & Lay Rock Bit of Asheville, Inc. Booth 67

### Bucyrus-Erie Co. Booth 58

An operating 1/12 size model of 150B 6-cu. yd. electric shovel, operated from a full size 150B control station.

### Buda Division—Allis-Chalmers Mfg. Co. Booth 59

Model 60A-844 diesel engine, and 15 kw. diesel generator set.

### Cape Ann Anchor & Forge Co. Booth 65

Full scale Cape Ann Drop Ball model in 3D, with mural of quarry scene in background.

### Caterpillar Tractor Co. Booth 60

New No. 955 Traxcavator, D318 diesel-electric set, D6 tractor with hydraulic bulldozer, and cutaway of D318 engine.

### Contractors and Engineers Booth 9

### Deister Machine Co. Booth 17

Heavy duty 4- x 12-ft. Type UHS Deister double-deck screen, featuring new adjustable slope screen panels at feed and discharge ends; photos of job applications.

### Diamond Iron Works— Division Goodman Mfg. Co. Booth 24

Illustrated literature and photographs describing complete line of Diamond products.

### E. I. du Pont de Nemours & Co. Booth 13

Emphasizing "Safer Blasting" with du Pont Nitramon and Nitramix explosives; also sound color movie on blasting.

### Dustex Corp. Booth 55

Operating display model of Dustex collector, the model consisting of nine tubes, with three tubes operating in a recirculating system.

### Eagle Iron Works Booth 11

Unique animated diagram of aggregate washing plant, showing flow of material by means of lights; also samples of aggregate, Kodachrome slides of installations, and an Eagle breaker ball.

### Easton Car & Construction Co. Booth 47

Small scale models of Easton trailers; large blowup job photos; other illustrative photos and literature.

### Euclid Division— General Motors Corp. Booth 14

Pictorial display showing application of Euclid products.

### Frog, Switch, & Mfg. Co.— Manganese Steel Dept. Booth 6A

### General Electric Co. Booth 32

### George Haiss Mfg. Co., Inc.— Division Pettibone-Mulliken Corp. Booth 61

Job photos and literature describing Haiss bucket loaders.

(Continued on page 138)





1955 has been a year of change, consolidation and progress in both a corporate and a technical sense for Dorr-Oliver. Just a year ago we were deeply involved in the complexities of merger and, as we near the end of this first year of combined operations, a review has more than the usual significance.

Perhaps most notable has been the remarkable integration of our combined staff and its growing effectiveness in every area of operation. With this integration came important organizational change — the creation of new groups to handle technical problems more effectively and to explore new opportunities. With it also has come the strengthening of sales staff in some areas and the opening of new offices in others, designed to provide better service to our clients and customers.

Of the utmost importance in this rapidly developing picture is the welcoming of Dorr-Oliver-Long Limited as a full member of the worldwide D-O family. The natural result of a close and friendly relationship dating back to 1911, the consolidation of our Canadian operations with those of E. Long Limited of Orillia on January 1, 1956, will unquestionably strengthen our overall operations.

**PULP AND PAPER** — In 1955, field testing and subsequent commercial acceptance of the Webwelder for splicing corrugating me-

dium and other heavy grades of paper was among our most significant projects. Contributing heavily to our volume of business were new or expanded Recaucizing Systems in the Pacific Northwest, Southeast, Canada, India, Sweden, Finland, Mexico and Chile. Next year the Horizontal Filter, already used for washing cotton linters, will be applied to pulp washing in a Southern mill.

**INDUSTRIAL WASTES** — Also in the pulp and paper industry, the largest biological kraft mill waste treatment plant in the world went into operation at West Virginia Pulp and Paper Company's Covington, Virginia, mill. And on the West Coast the most comprehensive treatment plant ever designed is now on stream handling wastes from an oil refinery. Both are D-O equipped. Orders were placed for waste treatment units to serve a midwest cannery and a large Eastern photographic equipment manufacturer.

**PETROLEUM** — The newly introduced D-Sander has proved to be extremely successful in removing sand from rotary drilling mud and has been widely utilized in the Gulf Coast oil fields. Fabrication of the longest petroleum filters ever constructed — six 10' x 22 3/4" Olivers for dewaxing — was completed at our Hazleton shops. Research and development continued on a new and unusual type of hydrocarbon purification unit, the applications of which appear almost boundless in the petroleum industry.

**URANIUM** — During the year a large D-O equipped Canadian uranium mill went into operation and orders were received for processing equipment to be used at six other United States and Canadian mills now under construction or being expanded. Facilities at our Westport laboratories have been enlarged to handle all types of uranium extraction work and to process small quantities of material from ore through "yellow cake". In a closely related project — the production of rare earths — D-O equipment will be widely utilized in a plant under construction.

**SUGAR** — As a result of three years of development we have introduced the RapiDorr Cane Juice Clarifier designed with 30% less volume than conventional units. A number of these machines will be in operation in the coming 1956 campaigns. Our associates in Italy have sold two Continuous Carbonation Systems for beet sugar processing on the Italian peninsula and mills in India will clarify cane juice in units manufactured by D-O GmbH in Wiesbaden.

**SANITATION** — The Densludge Process of prethickening sludge is now operating at two full-scale Biofiltration plants in the Southwest with general improvement in overall plant performance an unexpected result of its use. Tests have been virtually completed on a new Degritting Clarifier to be placed on the market in the near future. The Refuse Treator, which was developed in Holland and which may soon become an integral part of the domestic D-O line, gives the sanitary engineer another tool for the accomplishment of his ultimate goal.

**RESEARCH AND DEVELOPMENT** — Fundamental research has continued on the unit operations basic to D-O equipment. While such work is necessarily of a long range nature, increased fundamental knowledge has already led to marked advances in the field of clarification.

In addition to improvement of basic units, the company is constantly investigating new lines which can be profitably integrated with our other business. Current projects include an investigation to determine the manner in which D-O can make further contributions to the Atomic Energy Program and development of an ingenious Dutch device for fine screening.

**COPPER** — Half a world apart — in Israel

and Arizona — two D-O designed copper ore dressing plants, one a full-scale operation and the other a pilot plant, are now under construction. In the United States, three large concentrators in the Southwest ordered equipment for plant expansions and in the Belgian Congo the first FluoSolids System to roast copper concentrates prior to electrolytic recovery went into operation.

**FERTILIZER** — Missouri Farmers Association's new plant, proving ground for the Diammonium Phosphate Process, attained design capacity in record time at Joplin, Missouri. Utilization of this new process makes commercial production of unusually high analysis fertilizer from concentrated phosphoric acid possible for the first time. In Japan, two more D-O designed fertilizer plants went into operation and a third was under construction in Norway.

**WATER TREATMENT** — In the field of water purification, Caracas, Venezuela and Kansas City, Missouri have duplicated orders of previous years for plant expansions and new facilities now under construction in both India and Turkey will employ extensive D-O equipment. First installations of the PeriFilter System, introduced two years ago, have shown marked economies of construction and unusual adaptability to small plants.

**STARCH** — Following the example of current practice in the Netherlands where the Dorr-Clone was developed, five starch processing companies in other parts of the world ordered DorrClone Systems for their operations. Starch Washing Systems — each the first of its type in the various countries — will be installed in Brazil, Canada, Scotland and the United States. A fifth producer will use TM DorrClones to recover solids from starch washing filtrate in the U. S.

**FLUOSOLIDS** — Most significant achievement in the field of fluidization was the successful commercial demonstration of the first FluoSolids Coal Dryer. Equally adaptable to the drying of either metallurgical or steam coal, this unit will handle material as coarse as 1 1/2" with ease. During the year two other "firsts" were recorded — the first FluoSolids System went into operation in the Philippines and the first purchased for use in Germany. Repeat orders were received from companies in South Africa, Canada, Italy and Japan, and in the U. S. a large copper producer ordered its fourth complete System and seventh individual Reactor.

**CHEMICAL** — Expansion plans for alumina processing facilities in Jamaica and Germany, a potash counter-current decantation system in New Mexico, and new brine purification and pigment plants in the U. S. all incorporated substantial amounts of Dorr-Oliver equipment in their flowsheets.

Any pride we may feel in the events and accomplishments of the year is shadowed by the sudden passing of one of our Founder-Chairmen, Edwin Letts Oliver, late in the summer just past. His mechanical genius, strength and human warmth will be deeply missed by the engineering fraternity of the world. To Dorr-Oliver, and to those of us who knew him well, his loss is irreparable.

For the future, our resources are considerable. The initial enthusiasm and resourcefulness of our staff, the promise of new developments and the strength and solidarity of our Associates in Canada and abroad — all point to a steadily increasing ability to serve and an eventful year ahead.

*Edwin Letts Oliver*

Stanford, Conn., U.S.A.

(Advertisement)

## N.C.S.A. EXHIBITORS

(Continued from page 156)

### Harnischfeger Corp. Booth 48

Full size operating model of P & H electronic shovel control, P & H Magnetorque (electromagnetic type clutch), P & H diesel engine; and movies and photos showing job applications.

### HarriSteel Products Co. Booth 44

Various types and constructions of Harri-Steel screen cloth, including the Wabblly Weave.

### Hendrick Mfg. Co. Booth 8

Various types of perforated metal screens, including flat and flanged lip; also wedge slot and wedge wire screens.

### Hercules Powder Co. Booth 36

Feature Hercules "King-Rise" dynamite cartridges for small-diameter holes; also displays of blasting caps and other explosive materials.

### Hetherington & Berner, Inc. Booth 16

Photos and illustrated literature on asphalt plants, rotary dryers, and sand pumps.

### Hewitt-Robins, Inc. Booth 50

A new 24-ft. "Hi-G" vibrating screen, Super Raynille conveyor belt, screen cloth, woven wire belt, rubber hose, Robintron bin level indicator, Jones speed reducer and pillow blocks; and display of engineering services.

### Hoyt Wire Cloth Co. Booth 27

Various size samples of different constructions, weaves, and edge preparations of wire cloth, including Supertough, Abraso, and Stainless Steel wire; also distributing combination opening and wire gauge.

### Ingersoll-Rand Co. Booth 1

Several rock drills, including new three-way self-contained Drillmaster (combines rotary, out-of-the-hole, and down-the-hole drilling methods); jackbits; various air tools; and Gyro-Flo rotary portable air compressor.

### Iowa Manufacturing Co. Booth 46

Working models of Cedarapids double-impeller impact breaker and double-deck vibrating screen; plastic model and full size Cedarapids-Schrock motorized head pulley; animated display of impact breaker, using colored balloons; transmits and photos of field equipment.

### Jaeger Machine Co. Booth 43

New model Roto-Air Plus 600 rotary air compressor powered by GMC 671 diesel engine; Model 4PE electric pump used for water supply and dewatering; photos and data covering job applications.

### Jeffrey Manufacturing Co. Booth 29

Electric vibrating feeders, Type B swing hammer pulveriser, conveyor belt idlers, chains, and elevator buckets.

### Johnson-March Corp. Booth 40

Back drop showing Johnson-March liquid dust control system superimposed on 4 x 8-ft. stone plant photo mural; also illuminated working model of automatic nozzle control unit.

### Joy Manufacturing Co. Booth 53

New drill for wagon mounting, drilling up to 3-in. holes and incorporating many of features of Joy TM-600 Challenger drill; complete Joy line of tungsten carbide insert rock bits; flexible two-bearing Limberoller conveyor idler; photos illustrating complete line of drilling equipment and air compressors.

### Kennedy-Van Saun Mfg. & Eng. Corp. Booth 51

Uni-Form conveyor idlers, including chromi-um-plated troughing unit, return unit, and self-aligning troughing unit; model of Cuber Senior impact-type crusher; also installation photos.

### Kensington Steel Co. Booth 56

Kensington-Oro alloyed manganese steel replacement parts for crushers, shovels, and tractors. Including sand drag, cutter, and elevator chains; renewable tooth chain sprocket; elevator buckets; shovel treads and dipper teeth; renewable tip hammers and grate section for pulverisers; also running exhibit of tractor rail and grouser plate.

### Koehring Co. Booth 22

Dumpton (6-cu. yd. capacity); also enlarged transmits showing allied equipment.

### Link-Belt Speeder Corp. Booth 41

Transparent operating model of Speed-o-Matic power hydraulic system, showing complete operation; also color application photos of several new crane-shovels.

### Ludlow-Saylor Wire Cloth Co. Booth 30

Abrasion-resistant Super-Loy and Ludloy woven wire cloth, include wide variety of square and long openings in various wire diameters; also various styles of hook strips.

### Marion Power Shovel Co. Booth 7

Photos, etc. showing quarry applications of Marion rock machines.

### McLanahan & Stone Corp. Booth 23

Working models of screw washer-classifier and heavy duty log washer; detailed working models of component parts of machinery.

### Murphy Diesel Co. Booth 54

New 75-kw. in-line diesel-electric generator set with engine cutaways and job photos.

### Nordberg Mfg. Co. Booth 15

Complete line of Symons crushers, screens, and other rock products machinery; cutaway models in operation; also 5-min. film on cone crusher.

### Northern Blower Co. Booth 52

Models of Norblo automatic bag-type dust arresters and other dust collection equipment; photos showing various applications.

### Northwest Engineering Co. Booth 18

Color application photos of several Northwest shovels, cranes, and draglines.

### Pettibone-Mulliken Corp. Booth 61

Model 175 Speedall 1½-cu. yd. Tractor-Shovel; also job application photos.

### Pioneer Engineering Works, Inc. Booth 57

Quarter-scale model of Pioneer crushing and screening plant, incorporating feeder, jaw and triple roll crushers, two screens, bins, chutes, conveyors, etc.; scale model of new Vibromatic bituminous paver.

### Pit & Quarry Publications, Inc. Booth 49

Radio Corporation of America Booth 68

### Rock Products Booth 34

### Screen Equipment Co., Inc. Booth 4

Double-deck Seco screen with new stabilizer assembly.

### Simplicity Engineering Co. Booth 37

New build-up display featuring photos and job applications of Simplicity vibrating screens and feeders.

### S.K.F. Industries, Inc. Booth 12

### Smith Engineering Works Booth 31

Animated models of crushers, screens, feeders, and scrubbers; also distributing new handbook on aggregates.

### Stedman Foundry & Machine Co., Inc. Booth 20

### Stephens-Adamson Mfg. Co. Booth 25

Emphasis on Engineering Division; Amco manganese feeder; heavy duty belt conveyor idler.

### Taylor-Wharton Iron & Steel Co. Booth 10

Various types of drag conveyors, bucket elevators, etc.; also various manganese steel castings such as tread links, replacement jaws.

### Thew Shovel Co. Booth 28

Operating model (1/12 size) Lorain clam-shell; also colored enlargements of installations.

### Thor Power Tool Co. Booth 42

New BW2 and SW1 wagon drills, complete line of rock drilling equipment, sump pumps, and other air tools; also various products of Cincinnati Rubber Mfg. Co.

### Torrington Co. (Bantam Bearing Division) Booth 2

Array of various types of anti-friction bearings, including self-aligning spherical, cylindrical radial roller, tapered roller, roller thrust, and ball bearings.

### Traylor Engineering & Mfg. Co. Booth 5

Cutaway view of large Traylor gyratory crusher; enlargements of gyratory and jaw crushers, apron feeders, and kilns; also literature.

### W. S. Tyler Co. Booth 33

New 4 x 10-ft. Tyrock F-300 screen in operation; samples of Tyler screen cloth, Ro-Tap testing sieve shaker and standard Tyler testing sieves.

### Universal Engineering Corp. Booth 61

Experimental model and movies of new Wobbler Feeder, working model of 546-P primary crushing plant, and models of center feed hammermill and impact breaker.

### Vibration Measurement Engineers Booth 62

Nation's first self-operating Seismolog, under which seismic control of blasting is maintained by remote control methods.

### Wickwire Spencer Steel Division (Colorado Fuel and Iron Corp.) Booth 63

Super-tempered and Wiascoloy vibrator screen cloth and Wickwire wire rope.

### Williams Patent Crusher & Pulverizer Co. Booth 35

Models of mechanical air separator and reversible impactor; also photos of other Williams equipment.

## Cement Earnings to State Fund

THE SOUTH DAKOTA CEMENT COMMISSION has authorized the transfer of \$1,000,000 from the state cement plant operating funds into the general state fund. The state cement plant at Rapid City has enough money on hand to replenish a depleted inventory and pay for the expansion currently underway. Record sales are expected in 1956. In 1955, about \$1,750,000 from cement plant earnings was transferred to general state funds, including \$750,000 in late 1954, and the current \$1 million.

## Stock Dividend

PENN-DIXIE CEMENT CORP., New York, N. Y., declared a 5 percent stock dividend on the company's capital stock in addition to a quarterly cash dividend of 25 cents a share. Both dividends are payable December 15, 1955 to shareholders of record November 30, 1955. The new stock will not participate in the cash dividend payable December 15.

# To the man who's thinking about buying a new truck:

maybe you're missing something...

➤ And what you're missing is more than "maybe," it's for *sure*—if you haven't yet visited your Dodge truck dealer.

➤ Do you want to miss a *rock-bottom price*? Perhaps you haven't realized that Dodge trucks actually cost *less* than you'd pay for corresponding models of most other makes.

➤ Do you want to miss *power* so high it leads the field? Consider this: with engines of 169 to 175 horsepower, Dodge overpowers *every other leading make of truck* in the low- and medium-tonnage fields.

➤ Surely you don't want to miss the many advantages of

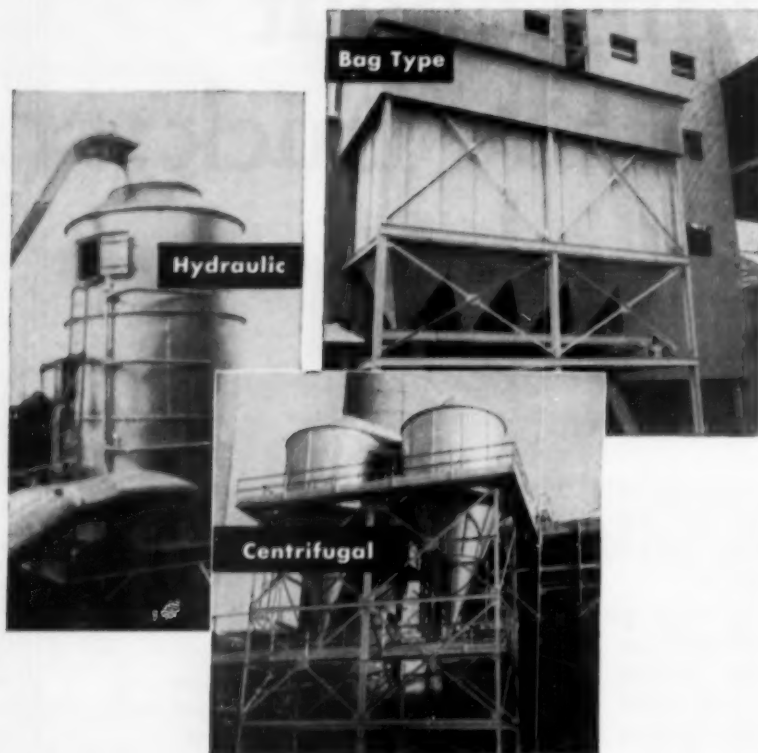
"*Job-Rated*." Because all units from engine to rear axle are engineered and matched for a specific job, the Dodge truck you buy is exactly *right* for your business.

➤ You don't want to miss Dodge safety—which includes the biggest wrap-around windshield of any truck on the road, the shortest turning radius. Or Dodge superior cab comfort... Forward Look Styling.

➤ In short, you get a whale of a lot more truck for a good deal less money than you think! Stop in and see your Dodge truck dealer right away—don't miss *anything*!

**DODGE** Job-Rated **TRUCKS**  
WITH THE FORWARD LOOK ➤

Use this valuable aid to  
safety, health, operating economy  
**...Norblo**  
engineered Dust and Fume Collection



Any dust condition can increase operating and maintenance costs, slow down employee performance and increase industrial accidents. Norblo helps you to achieve outstanding efficiency in dust and fume collection—helps you to avoid those costly factors economically.

Norblo's experience in the removal of injurious or "nuisance" industrial air contaminants as well as *salvaging* valuable materials has been extensive in most industries. Complete systems are engineered to specific situations, incorporating one or more of the three collection systems represented above, according to your need. Get the facts on Norblo *guaranteed* performance. Write us about your problem.

**The Northern Blower Company**

Engineered Dust Collection Systems for All Industries

6408 Barberton Ave. Olympic 1-1300 Cleveland 2, Ohio

**ROCKY'S NOTES**

(Continued from page 53)

volume of work has been done on the chemistry of portland cement hydration, but much uncertainty remains. The experimenter who seeks to learn what happens under practical conditions of cement use has a difficult task. He has to contend with the complexity of portland cement, the colloidal nature of the hydration products, the high concentration of the initial suspension, and the rapidity and finality with which cement paste solidifies to a dense, opaque mass little responsive to the methods of microscopy and X-ray analysis. As a result, most of the scientific work on cement hydration has been done not on the paste itself, but on systems of fewer components, or in any case by use of excess water. Such an oblique approach, often useful in research work, has been less rewarding than it commonly is, because of the unusual difficulties in verifying the indications relative to cement paste. Until satisfactory methods are found for verification through direct observation on the cement paste itself, contrary theories on what happens in the paste, or in concrete, will continue to exist side by side." Dr. Steinour thought application of differential thermal analysis offers a promising approach to solving some of these problems, and Dr. George L. Kalousek, University of Toledo, U.S.A., contributed a discussion on his use of differential thermal analysis in a study of the system lime-silica-water.

**Solution Theory Discounted**

A discussion by Dr. W. C. Hansen, Universal Atlas Cement Co., U.S.A., was of particular interest to us because it strengthens a belief we have expressed before that it is not necessary to assume actual solution and precipitation of the various components of portland cement to account for the reactions involved. Dr. Hansen said: "At present, there appears to be no experimental procedure by which it may be shown that  $3\text{CaO} \cdot \text{Al}_2\text{O}_3$  does not go into solution and immediately precipitate [with added salts] as the chloroaluminate, or that  $3\text{CaO} \cdot \text{SiO}_2$  does not go into solution and immediately precipitate a hydrated calcium silicate. However, it seems impossible for the quantities of  $3\text{CaO} \cdot \text{Al}_2\text{O}_3$  and  $3\text{CaO} \cdot \text{SiO}_2$  indicated [in reaction figures quoted in the preceding paragraph] to go into solution and precipitate as the reaction products in approximately one minute. Also one would expect to find significant quantities of  $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$  in the filtrate if supersaturation of the solution with



# AUSTIN-WESTERN CRUSHING EQUIPMENT

*Engineered for*

- HIGH OUTPUT
- CONTINUOUS OPERATION
- MINIMUM MAINTENANCE



Stationary Plant working a slag pile producing railroad ballast.

The Austin-Western line includes Jaw Crushers and Roll Crushers in many sizes; plus matching Screens, Elevators, Conveyors and Bins.

Exclusive design features and high operating speeds increase crusher output. Continuous operation and minimum maintenance expense are assured by the skilled engineering and sound manufacturing that characterize every Austin-Western Crushing and Screening Plant.

Each plant is designed to solve a particular production problem. We would welcome the opportunity to discuss your problem.

See your nearby Austin-Western distributor today . . . or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



15 cu. yd. Portable Bin and Screen Unit, ideal for producing specification material.



61E Portable Plant equipped with 10' x 24" Jaw Crusher, 24" Plate Feeder and 2' x 6' double-deck Screen.



201E Portable Plant equipped with 10' x 24" Jaw Crusher, 24" x 16" Roll Crusher and 3' x 10' Screen.

Stationary Plant producing 2 sizes of sand and 2 sizes of washed gravel.



Distributors in Principal Cities  
of the world



**AUSTIN-WESTERN**  
CRUSHING, SCREENING & WASHING EQUIPMENT

**BALDWIN-LIMA-HAMILTON**

Construction Equipment Division  
LIMA, OHIO, U.S.A.

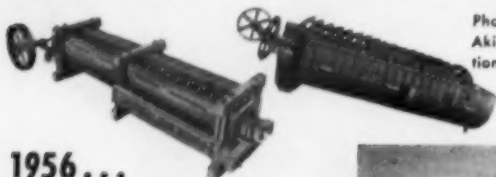
# AKINS...1st in EXPERIENCE

## on efficient, low-cost sand washing

**1908...** the first Akins. Colorado Iron Works Company, established in 1860, specialized in making crushing, grinding, screening, cyanidation, amalgamation and smelting equipment. The Akins Classifier was developed by CIW to provide a practical, continuous system for separation of sand from slime.

The outstanding success of the Akins lead to many other successful applications and to Akins leadership in the field of classification. Today, every Akins installation on classification, sand washing, and heavy media is backed by 48 years of specialized classifier experience, 96 years experience in the mining machinery business.

**1908...** first Akins. for SHANNON COPPER CO., Clifton, Arizona.

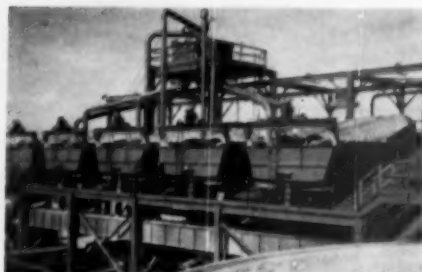


Photos show typical early models of the Akins, including one of wood construction for acid conditions.

**1956...**

### Akins Sand-Washing Classifiers

Photo shows typical installation of Akins classifiers. When designed for sand washing, Akins classifiers have flared tanks with large pool area for thorough, clean washing; they provide close separation to exacting specifications; and for difficult sand-slime separations, are frequently equipped with lifter rods and spray water boxes.



## 1912...A statement of policy...Then as now

"Our aim has always been the production of a high-grade line of machinery, the prices being made as low as consistent with high quality. In no case do we attempt to build a machine to come within a certain price and place it in the field of competition with others having low first cost as their chief merit. It is this policy, consistently maintained for fifty years, that has established our enviable reputation."

(taken from CIW catalog 10C published in 1912)

AKINS® ... the Original Spiral Classifier  
\*A registered trademark of CIW

# COLORADO IRON WORKS Co.

DENVER, COLORADO

## WRITE FOR CATALOG

## SPECIALISTS IN CLASSIFICATION FOR 48 YEARS

respect to chloro-aluminate and hydrated calcium silicate, were involved. It seems, therefore, that  $3\text{CaO} \cdot \text{Al}_2\text{O}_3$  in reacting with water and salts to form the double salts such as sulpho- and chloro-aluminates, does so by direct reaction of the solid with dissolved salt and water. Also, that the hydrolysis of  $3\text{CaO} \cdot \text{SiO}_2$  to a hydrated silicate and  $\text{Ca}(\text{OH})_2$  is a direct reaction of the solid with water which liberates  $\text{CaO}$  to the solution with direct formation of a solid hydrated calcium silicate."

Among the reasons for supporting this theory Dr. Hansen said: "Generally crystals of  $\text{Ca}(\text{OH})_2$  are the only identifiable crystals in hydrated cement pastes. The fact that crystals of calcium sulpho-aluminate are not found is an argument in favor of the solid reaction theory because identifiable crystals should be formed by crystallization from a supersaturated solution as is the case with  $\text{Ca}(\text{OH})_2$ ."

"This mechanism of the direct conversion of  $3\text{CaO} \cdot \text{Al}_2\text{O}_3$  and  $3\text{CaO} \cdot \text{SiO}_2$  to solid products explains why cement products expand during reaction with water. It is well known that cement pastes shrink until they become rigid, after which they expand. The shrinkage is to be expected because the sums of the volumes of an anhydrous compound plus the water of hydration are greater than the volume of the hydrated product. One might expect, therefore, that a cement paste would continue to shrink as it hardens. The fact that it expands seems never to have been explained, except on the basis that the paste contained prismatic crystals which tended to grow and create space for themselves instead of forming new crystals in available space.

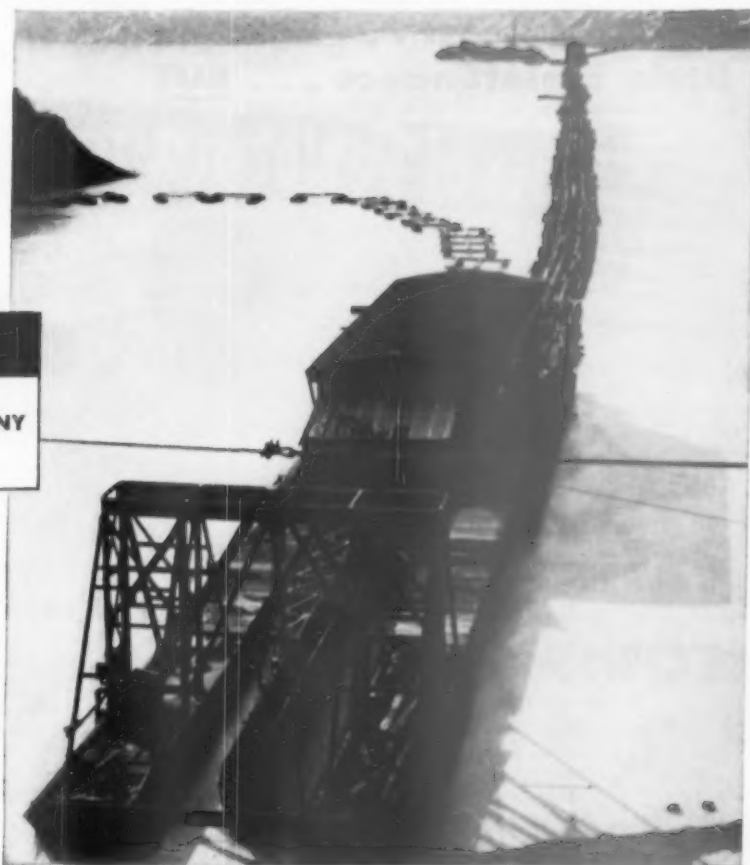
"On the basis of the cement minerals going directly from one solid to another, one can visualize a simple system of four grains of cement touching each other and leaving a space at their center filled with liquid. As these draw water and calcium sulphate from this space, the new hydrated products formed at the interfaces between them would force the unreacted portions of the grains to move to make room for the hydrated products. If they go into solution and re-precipitate, the reprecipitation should occur largely in the space formed by the particles going into solution and in the space occupied by the liquid phase. This expansion of specimens during hydration strongly supports the theory of direct change of the solid anhydrous products to hydrated products.

"If the reactions of the grains of cement are, for the most part, direct transformations of one solid to an-

(Continued on page 164)

AMSCO PUMP APPLICATION FILE

at: THE STURM & DILLARD COMPANY  
CINCLEVELLE, OHIO



**"Bought our first  
AMSCO® Pump  
20 years ago  
on the recommendations of other users . . ."**



"Working with Amsco Pumps has been very successful," reports George A. Fissell, Superintendent for Sturm & Dillard. "Compared to the dry digging method we used 20 years ago, it doesn't cost nearly as much, even with today's expensive labor."

Two Amsco Pumps serve this plant; the 20-year-old on the dredge is 2,000 feet from the plant and a 3-year-old on the booster is 1,200 feet from it. Their total lift is 30 feet. The Swintek ladder on the dredge works as deep as 60 feet when it's straight down, picking up a mixture of 35% sand and 65% gravel.

The shells of these Amsco Pumps are rebuilt with Amsco welding rod and Amsco shapes after a season of 1,500 hours, and replaced after the second season. Impellers also run a full season. Bearings on the 20-year-old pump were replaced just once, after ten years of service. Elbows and 45's in the pipeline are also Amsco fittings.

QUICK FACTS ABOUT AMSCO PUMPS



Whether your dredging operation is large or small, you can get an Amsco Pump for the job. There are 40 distinct Amsco Dredge Pump models—each type intended for a specific operating range. Standard sizes range from 6" to 20" discharge openings. Larger sizes are also available.

An Amsco Pump engineer will be glad to discuss your requirements. Write for Bulletin No. 1052P which includes specifications and additional information on the Amsco line of pumps.



**AMERICAN MANGANESE STEEL DIVISION**  
Chicago Heights, Ill.

**Moderate cost . . . light on labor  
little maintenance . . . BUT**

**Tons of Performance**



Crescent Scraper of 5-cu. yd. capacity—rigged for gravity return—shown returning to excavation point in the pit. Ask for Catalog A.

## SAUERMAN EQUIPMENT

Check on digging power . . . rate of haul . . . clean dumping. Add labor economy . . . low upkeep . . . personnel safety . . . moderate power consumption. Total up the score . . . you'll choose one of these Sauerman Machines for your operation.

**DRAG SCRAPER:** best for pit or hill excavation, reclamation or general handling of materials, wet or dry. Serves as rapid, long range conveyor. Sizes  $\frac{1}{2}$  to 18 cu. yds.

**SLACKLINE CABLEWAY:** best for deep digging — especially underwater — and conveying to a high delivery point. Reaches down a hundred feet or more . . . spans up to 1000 ft. . . sizes  $\frac{1}{2}$  to 3  $\frac{1}{2}$  cu. yds.

**DRAG SCRAPER STOCKPILER:** best for profitable handling of sand and gravel, ores and chemicals. Low on first cost, plus economical one-man operation.

**CRESCENT SCRAPER ON BOOM MACHINE:** best for increasing the work capacity of any boom machine on backfilling and grading jobs. When scraper is used with track cable and trolley machine, range is greatly extended.

Call on Sauerman's experienced engineers for the size and type system best suited to your digging, hauling or materials handling requirements. Write for catalog . . . ask for idea-packed Sauerman News.



Slackline cableway performs difficult excavation of non-saving material from deep pit. 70% rock and 30% mineral sand good tough digging job. Ask for Catalog C and Field Report 216.



Two small scrapers reclaim different sizes of crushed stone from adjoining piles to belt conveyors delivering to a common hopper used to load cars with straight or mixed sizes. Ask for Catalog E.



Crescent on boom machine dumps large load of wet soil. Bucket is gravity returned on track cable to digging point. Ask for Catalog J-I and Field Report 226.

**SAUERMAN BROS. INC.**

630 S. 28th Ave.

Bellwood, Ill.

## ROCKY'S NOTES

(Continued from page 162)

other, there is not much likelihood of the formation of hydrated products containing both  $Al_2O_3$  and  $SiO_2$ . This would be much more likely if the reactions took place through solution. The work of Kalousek and co-workers points to the formation of one phase containing all the oxides of cement. However, Dr. Steinour apparently visualizes that the physical intermingling of the finely divided reaction products might, in a sense, behave as "one common gel" for he states "The nature of the combination may be more physical than chemical."

We take the foregoing to mean that when water penetrates a porous piece of clinker, the clinker particle does not dissolve, but remains a solid with the release of its excess lime to solution, or to colloid suspension in the water as  $Ca(OH)_2$ ; the remaining part of the particle becomes hydrated as is, or partly so, thus accounting for the conglomerate kind of gel that is formed. Since it never loses this character after hardening, there are no separate kinds of crystals, except the  $Ca(OH)_2$ . Other crystals would form only if the solvent was supersaturated with one after another of the cement minerals.

"The reaction of cement hydration at elevated temperatures" was discussed in a paper by Dr. George L. Kalousek. This subject is of primary practical interest only to products manufacturers using high-pressure steam curing. The main conclusion we would draw from a rather lengthy paper is that the high temperature steam curing does not do the product any particular good unless extra reactive silica is added to the mix. In other words high-temperature steam curing is helpful because it activates silica and results in the ready formation of more and better calcium silicate gel than would be formed from the cement alone.

The next installment of this review will discuss some of the papers in which the authors tried to throw some light on the problems of durability of concrete.

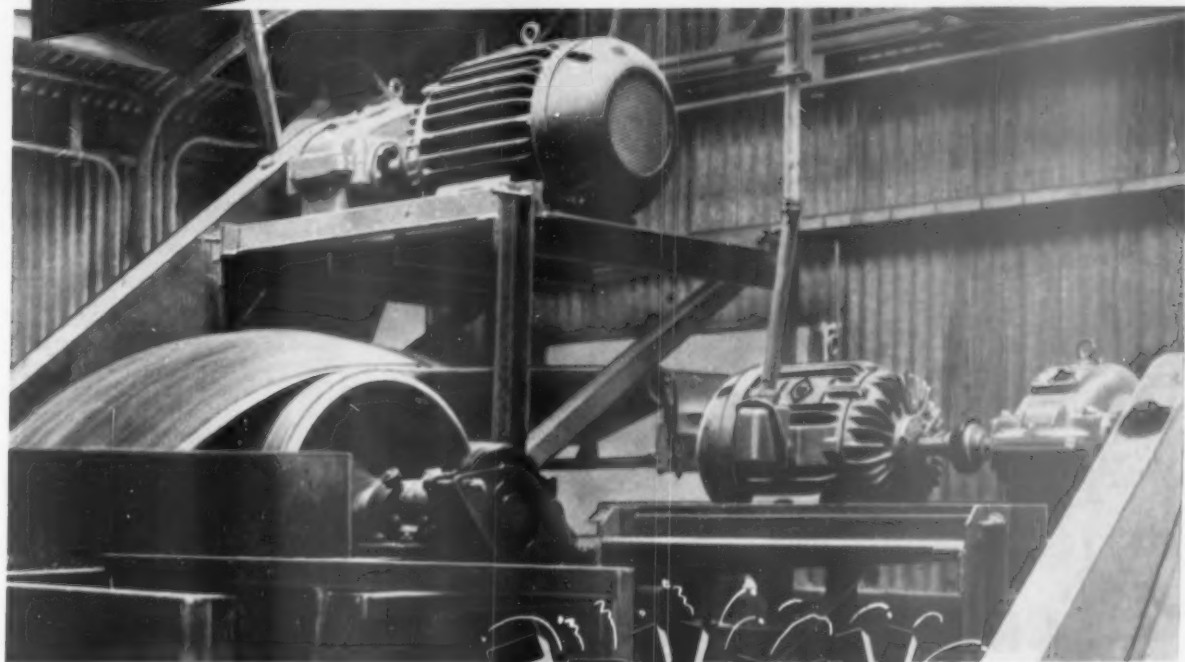
## Gypsum Percentage Depletion

GYPSUM ROCK used or sold to be used as a retarder in the manufacture of cement is not considered used as "concrete aggregates or for similar purposes" under the provisions of 1954 Code Sec. 613(b)(6) and, consequently, the 15 percent rate for percentage depletion is allowable rather than the 5 percent rate. (Rev. Rul. 55-657, 37,391 Code Vol.)



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**MORE**

Cooling Surface in these deep-ribbed **MOTORS**



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**FRIDAY**

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**MOTORS**

● Frying of insulation is impossible under normal conditions with the extra-large cooling surface of Allis-Chalmers rib-type TEFC motors. The result—you expect and get longer motor life.

The engineered partner of A-C motors is Allis-Chalmers control.

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As a new machinery component or as replacement, specify Allis-Chalmers. Discuss your particular application with your nearby A-C distributor, A-C district office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

**ALLIS-CHALMERS**



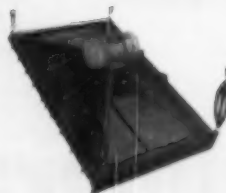
A 4920



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## **SYNTRON VIBRATING SCREENS**

Syntron Vibrating Grizzly Bar Screens will increase the efficiency of any operation requiring scalping or coarse screening — with high speed vibratory material flow and separation and variable control of the material flow. Results are far better separation — elimination of friction and abrasion between material and bars.

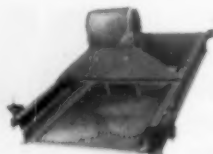


### **SYNTRON-SINEX SCREENS**

Syntron Sinex Screens are designed for fast, uniform dry or wet screening of many bulk materials. Replaceable screening surface.

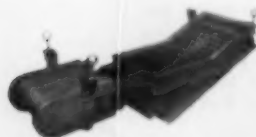
### **PULSATING MAGNET SCREENS**

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### **SCREENING FEEDERS**

Screening Feeders utilize powerful electromagnetic drives to desize, desludge, de-water, desilt, dedust bulk materials.



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## **LABOR RELATIONS**

(Continued from page 55)

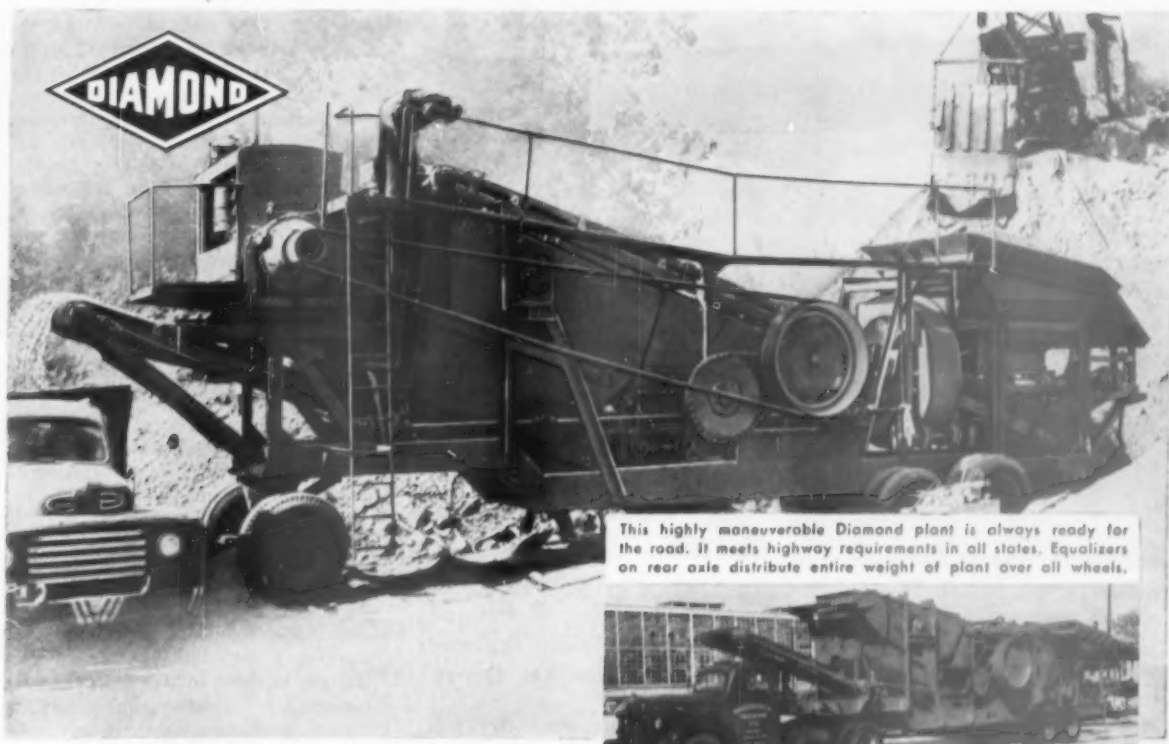
be considered in the nature of a gift. \* \* \* and it is further indicated that if gifts are paid with regularity so that employees expect them, they may be excluded. However, with respect to §7(d) (3), there is no condition of limited amount, and by the very terms of §7(d) (3), the excludable bonuses are paid in recognition of services for a given period and are not limited to insubstantial or small amounts.

"I have mentioned the provisions of the interpretive bulletins not because they are assumed to be of controlling importance, but because that phase also is deemed persuasive of the conclusion that I have reached. Most of the other reasons which I might advance — the most basic ones — are considered in the Frank Adams Electric Co. case, *supra*. But no case which I have seen has commented on the significance of the new interpretive bulletin which I mentioned above as of possible additional interest.

"It would be a work of arrogance to restate here the other reason so ably debated in the Second and Eighth Circuits. It seems sufficient here to indicate that I believe that the approach of the Eighth Circuit to the problem is more reasonable, and more likely to permit a result consistent with the intent of Congress. Nor does a detailed analysis of the evidence appear necessary. The following references should be sufficient to indicate the factual basis of my conclusions that the defendant is entitled to prevail in this case.

### **Facts of Case**

"The evidence established that the bonus in the past has been paid frequently, but not invariably. As it was first paid, and later continued, it had no effect in reducing the regular rates of pay, which already were well above the required minimum. While the history of these bonus payments was known by many of the defendant's prospective employees when they were hired, none of them, and none of the existing employees, regarded their continuation at all, or in any particular amount, assured. There was no evidence that the payments were made at any time pursuant to any contract, agreement or promise, express or implied. The board of directors at the end of the period would consider what bonus, if any, the profits would justify, in its discretion, and in most of the years covered by the evidence, would authorize the payment of a bonus based either upon a 40-hour week or a 44-hour week and representing greatly varying percentages of earnings on



This type 66 Diamond plant has a shovel loading hopper equipped with a grizzly for scalping and a single eccentric plate feeder which assures continuous, regulated feeding from hopper to plant. D-167R

This highly maneuverable Diamond plant is always ready for the road. It meets highway requirements in all states. Equalizers on rear axle distribute entire weight of plant over all wheels.



D-806

## Diamond Portable Crushing Plants can increase your profits

It's a fairly simple matter to produce aggregate. But differences in crusher capacities—even within the same class—can make or break your profits.

Aggregate records of many companies prove that any one of the five Diamond primary and secondary crushing plants will not only out-produce other machines in its class . . . it regularly exceeds its own rating!

For example, Diamond's type "66" plant, with a rating of 100-125 cu. yds. per hour produced as high as 225 yards of  $\frac{3}{4}$ " minus road gravel per hour in various pits. And aggregate moves faster with a Diamond. A Diamond developed rotor-lift recirculates loads at higher speed and more economically than other systems for secondary crushing.

Other Diamond primary and secondary crushing plants, rated in capacity from 30 cu. yds. to 225 cu. yds., are equally efficient aggregate producers. All feature Timken roller bearing jaw crushers and roll crushers for fast, efficient crushing.

Additional Diamond features include a positive throw vibrating screen with four Timken roller bearings; a power drive with option of flat belt, V belt or spline shaft . . . and many others that aid in volume production at low cost per ton.

It's easy to see why companies that base their profits on aggregate production ability, invariably order another Diamond when expanding operations. Get full details today . . . no obligation.

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Roll Crushers • Jaw Crushers • Conveyors • Screens and Washers • Feeders and Bins • Crushing Plants for Rocks and Gravel

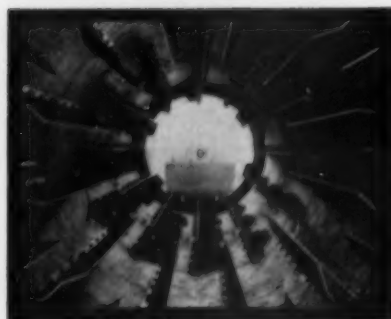
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Name and title \_\_\_\_\_

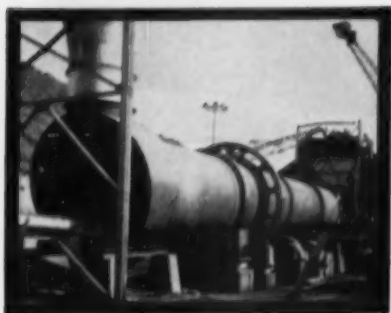
Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



Interior of shell of "XH" Ruggles-Coles Dryer showing lifting flights and "knock-out" chains.



10' diameter, 80' long "XH" Ruggles-Coles Dryer drying bauxite.

from  
**A**lumina ores  
to  
**Z**ircon concentrates

... in the drying of ores and concentrates. That is the story of Ruggles-Coles "XH" Dryers.

Small or large, each dryer is designed for the specific requirements of the user with the knowledge and experience gained from hundreds of installations.

Complete specifications upon request. Ruggles-Coles Dryers are described in Bulletin AH-438-7

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**ROCK PRODUCTS**  
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Recognized Authority  
OF THE  
Non-Metallic  
Minerals Industry

that basis. The minutes in a few instances referred to a 'plan' of profit sharing, but when considered in the light of all the surrounding circumstances, did not indicate any continuing design or plan, or even a tacit arrangement from year to year. On the contrary, the omission of any bonus during the war, its unpredictable amount from year to year when granted, and the avoidance by the management of any reference to a plan or promise of any continuation, all negate the contentions of the Government in this case.

"True, the Government points to the avoidance of the subject in discussions with employees as evidence of concealment and circumvention. This only points up the difficult situation of a company desiring to pay a discretionary bonus as authorized by law. If it tells its employees about its past record in this respect, it may be charged with using the bonus as a hiring inducement, or as an incentive for additional work and with thus making it includable as regular pay for the purpose of overtime compensation; if it avoids any reference to the bonus in its discussions, it lays itself open to the charge of deviousness or concealment. Suffice it to say, however, that despite the appearance of numerous employees and former employees called by the Government, there was no substantial indication of any sham or concealment in the attitude of the company with reference to the bonus; an exception was the treasurer's responses to the Court's questions concerning the relationship of the bonuses and profits for certain years. I have concluded, however, that his apparent lack of candor could not overcome all of the implications favorable to the defendant, arising from the great preponderance of the evidence.

#### Discretionary Bonuses

"I conclude that the bonus payments of the defendant company in the past have been discretionary within the contemplation of §7 (d) (3) of the Fair Labor Standards Act as amended; that falling within the exception contained therein, the fact that they have been continued, both prior to, and after, the Act came into effect to the extent that employees have generally become acquainted with the prior payments and regard their employment as more promising by reason thereof, does not, in and of itself, require the inclusion of these bonus payments in the computation of overtime compensation; that the preponderance of the evidence, to the contrary, indicates that these bonuses are purely discretionary with the management; that there was no contract, ei-



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**1105**

**HAS THE CAPACITY TO ENDURE...**

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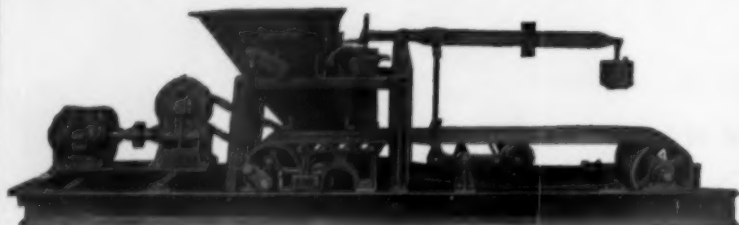
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# What's your scaling problem? **SCHAFFER POIDOMETERS**

**WEIGH, BLEND, FEED MIX, PROPORTION**



Schaffer Poidometers perform a wide variety of scaling functions for handlers of raw and finished bulk materials.

Years on-the-job prove your production goes up . . . costs go down when you install super-service Schaffer Poidometers.

For weighing, blending, feeding, mixing, recording or proportioning, Poidometers improve product uniformity . . . cut labor and machine costs.

Let us give complete details on this production-booster today.

Available with total weight recorders, and remote controls for showing and changing feed rate.

Write for latest Catalog No. 6

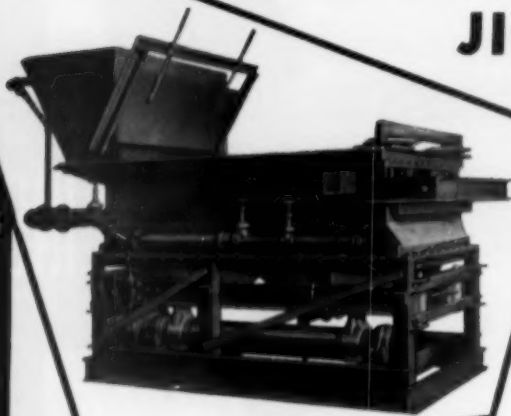
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### REMOVES

WOOD  
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Improve your sand and gravel specifications at a low cost per ton. Of compact design, the Meckum Jig separates law from high specific gravity materials with a positive water and mechanical action.

Write us for details or nearest installation.

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ther in form or in substance for the payment of the bonuses but a bona fide exercise of the right to pay a discretionary bonus within the contemplation of the Act; that the amounts of payments, the times that they have been paid and other circumstances of their payment, either standing alone or in connection with all other facts shown by the evidence, do not render these payments other than discretionary, and that to enjoin it from paying discretionary bonuses as authorized by the express provisions of the Act cited, which injunction would be contrary to the intent of the Act, not within its purposes and to the detriment of the employees.

"I do not mean to indicate that a further or long-continued pattern of bonuses might not be persuasive of a different result if it were thereby established in view of all the other developing circumstances that continued payment of the bonuses or the amounts thereof were pursuant to a prior contract, agreement or promise causing the employee to expect such payments regularly. I simply determine that this condition has not been established at the present time.

"Defendant may prepare formal Findings of Fact, Conclusions of Law and Judgment in accordance with the views above expressed, to be submitted to opposing counsel for approval as to form prior to their submission to the Court."

### Hand-Cobbed Mica Prices Cut

THE GENERAL SERVICES ADMINISTRATION has ordered a substantial reduction in the prices it will pay for "hand-cobbed" mica under its mica supply expansion program. The G.S.A. will pay a ceiling of \$600 a ton for hand-cobbed ruby mica, and \$540 a ton for hand-cobbed non-ruby mica. The government will buy good stained or better, stained, and heavy stained grades. According to a G.S.A. spokesman, the reduction was ordered because the prices being paid to mica producers under the program "were getting too high." The price reduction affects only the so-called Program B, providing for federal purchase of hand-cobbed mica requiring further processing before it is used industrially.

### Import Foreign Cement

ABOUT 1000 TONS or 20,930 sacks, of cement were recently imported from Malmo, Sweden, for Tews Lime & Cement Co., Milwaukee, Wis., to alleviate a local shortage. The shipment was the fourth foreign cement cargo to be received at the Milwaukee dock last summer. Two of the shipments were from Europe, and two were from Canada.



*All Crushed Stone Producers*

WHETHER OR NOT MEMBERS  
OF NCSA

**Are Cordially Invited**

*to attend the*

**39th ANNUAL CONVENTION**

**and**

**MACHINERY EXPOSITION**

**of the**

**NATIONAL CRUSHED STONE ASSOCIATION**

**AT THE CONRAD HILTON, CHICAGO, ILLINOIS**

**February 20, 21 and 22, 1956**

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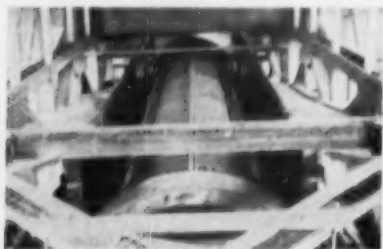
**THE CONVENTION AND EXPOSITION ALL UNDER ONE ROOF**

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**BUCKET LADDER AND HYDRAULIC DREDGES** for dredging placer properties, harbor and levee construction, channel changes, production of sand and gravel. Hydraulic dredges from 6-inches up; bucket sizes: 2½ to 18 cu. ft., or larger. Digging depths below water as required.



**ABRASION RESISTING STEEL SCREENS**—flat or revolving for separating, scrubbing, sizing. Holes taper drilled to prevent clogging. All thicknesses from 3/16" up; other dimensions as needed. Abrasion resisting steel plates available from stock.



**DOUBLE-DRUM HOIST**, 1,000-ton capacity, built to handle 194-foot digging ladder, typifies heavy equipment Yuba can build for you.

For estimates, send us your drawings or specifications. No obligation.



**YUBA MANUFACTURING CO.**

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## N.S.G.A.—N.R.M.C.A.

(Continued from page 134)

### Littleford Bros., Inc.

Model 909 Kwik-Steam 35 B.hp. automatic package steam generator.

### Ludlow-Saylor Wire Cloth Co.

Abrasion-resistant Super-Loy and Ludlow woven wire cloth, including wide variety of square and long openings in various wire diameters up to 1-in. Super-Loy bars; also various styles of hook strips.

### McLanahan & Stone Corp.

Working models of screw washer-classifier and heavy duty log washer; detailed working models of component parts of machinery.

### Mack Manufacturing Corp.

Full size chassis for dump truck or mixer service; exploded display of Mack 170-hp. diesel engine, and new 20-speed single unit Quad-ruplex transmission, and working demonstration of Mack Power Divider, non-spinning differential used in six-wheeler chassis.

### Marion Power Shovel Co.

New 83-M 2-cu. yd. and 101-M 3-cu. yd. machines, and photos of job applications.

### The Master Builders Co.

Colorful animated display pointing out uses and advantages of Pozzolite.

### W. R. Meadows Inc.

Complete line of paving products, including expansion joints, concrete curing compounds, rubber asphalt joint seal, air entraining agents, and "Premoulded Membrane" vapor seal; also cutting machine for expansion joints.

### Meckum Engineering, Inc.

Photographs and literature of Meckum products, showing applications; also gravel samples produced by Meckum jig, and sand samples produced by new classifier.

### Monarch Road Machinery Co.

### Morris Machine Works

Type GA 12-in. dredge pump mounted on short base and Type RK 2-in. slurry pump made with aluminum parts so unit can be easily disassembled for spectators.

### Motorola Communications & Electronics, Inc.

New Motorola "Twin V" two-way FM radio equipment, which is adaptable to either 6-volt or 12-volt battery source without internal change in the unit.

### Murphy Diesel Co.

New 75-kw. in-line diesel-electric generator set, with engine cutaways; background of engine and generator set applications.

### Napco Industries, Inc.

### National Conveyor & Supply Co.

National Model D car shaker, attached to side of simulated hopper car; also installation photos.

### Noble Co.

Full size Noble Mobile cement and aggregate batching plant on wheels.

### Nordberg Manufacturing Co.

Complete line of Symons crushers, screens, and other rock products machinery; also cut-away models in operation; also 5-min. film on cone crusher.

### Northwest Engineering Co.

Colored application photographs of several models of Northwest shovels, cranes and draglines.

### Oshkosh Motor Truck, Inc.

New Model 50-50 ready mix carrier with front power take-off, Model 18-32 6 x 6 carrier, and display panel of transits showing various makes of mixers mounted on the 50-50 model.

### Pettibone Mulliken Corp.

Model 175 Speedall 1½-cu. yd. Tractor-Shovel, featuring Speedmatic powershift transmission and planetary axles; also job photos.

### Pick Manufacturing Co.

Pick instantaneous water heater, with data on installations in ready mix industry.

### Pioneer Engineering Works, Inc.

Quarter scale model of Pioneer crushing and screening plant, incorporating feeder, jaw and triple roll crushers, two screens, bins, chutes, conveyors, etc.; also scale model of new Vibrometer bituminous paver.

### Pit & Quarry Publications, Inc.

### Quaker Rubber Corp. (Div. of H. K. Porter Co., Inc. of Pittsburgh)

Samples of Quaker belts and idlers, new model conveyor belt unit, installation photos, and literature on belting and rubber hose.

### Radio Corporation of America

Feature advantages of use of two-way radio; displaying Carfone and Fleetfone Mobile communications equipment.

### Reo Motors Inc.

Models of 160-hp. 6-cylinder and 220-hp. V-8 engines, and new lightweight model F566-M ready-mix chassis.

### Richmond Screw Anchor Co., Inc.

### Rock Products

### Sarasota Engineering Co., Inc.

H<sub>2</sub>O meter for instantaneous moisture readings of fine aggregate.

### Sauerman Bros., Inc.

DragScraper ¼- to 3-cu. yd. buckets, Duro-lite wire rope blocks in various sizes, also scale model of Drag Scraper hoist, and job photos and enlarged drawings of installations.

### Scientific Concrete Service Corp.

A new continuous automatic method of moisture determination (dial or recorded on graphic chart); new automatic batching scale for large plants; recorder that shows both aggregate and cement on a single 10-in. wide chart; a new way to determine fineness modulus.

### Screen Equipment Company, Inc.

Double-deck Baco screen with new stabilizer assembly.

### Servicized Products Corp.

Concrete specialty products, such as pre-molded expansion joint fillers, rubberized sealing compounds, liquid concrete curing compounds, rubber waterstop, silicone water-proofing materials, and rubberized sealing.

### Sika Chemical Corp.

Photo murals of concrete projects. Literature on Plastiment retarding densifier, Sika-concrete accelerating densifier, and Sika retardant form coating.

### Simplicity Engineering Co.

A 30-in. x 9-ft. On-A-Veyor-type feeder, a 12-in. x 8-ft. On-A-Veyor Simplicity feeder mounted below a hopper; and a 4- x 8-ft. Simplicity heated screen.

### S.K.F. Industries, Inc.

### The T. L. Smith Co.

### Smith Engineering Works

Animated models of crushers, screens, feeders and scrubbers; also introducing handbook.

### The Solvay Process Division (Allied Chemical & Dye Corp.)

Feature Solvay calcium chloride and its use in ready-mixed concrete.

### Stedman Foundry & Machine Co., Inc.

### Stephens-Adamson Mfg. Co.

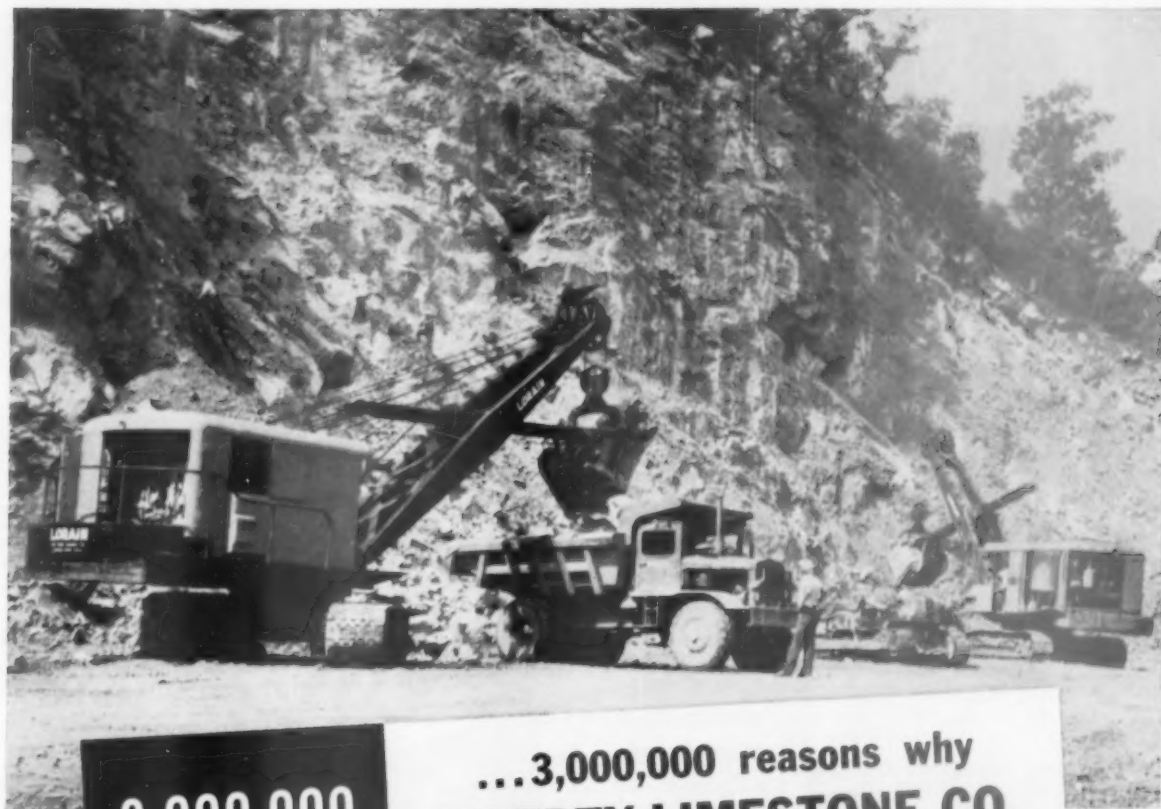
Emphasis on Standard Products Division. Centrifugal thrower units, belt conveyor idlers, and related equipment.

### Symons Clamp and Mfg. Co.

New wide panel forms for low construction, flat tie form, adapter plate, and flat tie.

(Continued on page 174)





**3,000,000  
TONS**

**...3,000,000 reasons why  
LIBERTY LIMESTONE CO.  
BUCHANAN, VIRGINIA  
bought this new LORAIN-85**

The two Lorain Shovels in the photo tell a story of owner satisfaction. In the background, a 14½-year-old, 2-yd. Lorain is still digging away after moving 3,000,000 tons of rock and earth. In the foreground a brand new Lorain-85, joins the veteran, bought because of the outstanding service and performance record of the old machine. The new "85" is shown working against a 250-ft. face, moving up to 1500 yards of heavy rock per day.

Lorain-85's have such features as center drive concentration of engine power; anti-friction bearing-mounted swing and hoist drums; heavy-duty close-coupled design; independent chain crowd; Hydraulic Coupling power take-off; Torque Converter also avail-

able; removable counterweight; self-equalizing turntable rollers on roller bearings; air controls for hoist, crowd, retract, crawler traveling and steering; tread lock and crowd brake; centralized lubrication; longer shovel booms (26'); air dipper trip; new, wide crawlers. Many, many more advantages, too.

See your Thew-Lorain Distributor for facts about the Lorain-85 and other models in the complete Lorain line.

**THE THEW SHOVEL CO., LORAIN, OHIO**

**THEW  
LORAIN**

## You're Sure with Merrick



**FOR Positive Controlled  
Feed by Weight of Sand  
Gravel, Lime Clinker,  
Gypsum or other materials to Process—**

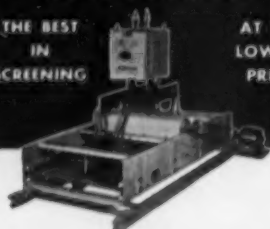
Use the Feedweight

**Merrick Scale Mfg. Co.  
Passaic, New Jersey**

## UNIVERSAL

THE BEST  
IN  
SCREENING

AT THE  
LOWEST  
PRICE



**THE MOST MODERN AND EFFICIENT  
ELECTRIC HEATING EQUIPMENT  
AT A REASONABLE PRICE**

- **VIBRATING SCREENS—**  
All sizes and types
- **UNILEC HEATING  
EQUIPMENT**
- **UNIFLEX VIBRATORS**
- **UNIVIBE RIDDLES**

WRITE FOR CATALOG NO. 150

**UNIVERSAL  
VIBRATING SCREEN CO.**  
Racine, Wisconsin  
Quality Screens Since 1919

## W. O. & M. W. Talcott, Inc.

Complete line of Talcott belt fasteners featuring the Acme Patch Fastener.

## Taylor-Wharton Iron & Steel Co. (Division Harrisburg Steel Corp.)

Various types of drag conveyors, bucket elevators, etc.; also various manganese steel castings, such as tread links, replacement jaws, cages, etc.

## The Thew Shovel Co.

An operating model (1/12 size) Lorain clam-shell charging bin with sand; also colored enlargements of installations.

## The Travel Batcher

New full size Travel Batcher and also working model.

## The W. S. Tyler Co.

New 4- x 16-ft. Tyrock F-300 screen in operation; samples of Tyler screen cloth; a Ro-Tap testing sieve shaker and standard Tyler testing sieves.

## Union Wire Rope Corp.

Samples of stress relieved wire and strand, wire rope, and slings; also color job photos.

## Unit Crane & Shovel Co.

Model 1020 shovel, one-piece cast gear case of Challenger Model 510; also transmits of job applications.

## Universal Engineering Corp.

Experimental model and movies of new Wobbler Feeder, working model of 546-P primary crushing plant, and models of center feed hammermill and impact breaker; also troubleshooting rolls.

## Western Machinery Co.

## The White Motor Company

Autocar truck mounting transit mixer, late model White truck, and industrial engines.

## Whiteman Manufacturing Co.

Champion Model C85 5½-cu. yd. transit mixer mounted on Diamond T Model 730 SLDD truck chassis.

## Willard Concrete Machinery Co.

Truck mixer (5½-cu. yd.) powered by a six-cylinder rear-aid mounted Chrysler industrial engine.

## Charles E. Wood Co.

Working models of two Auto-Vortex cones and one Auto-Vortex bowl classifier, water and sand being circulated by a Nagle pump; also color job photos.

## Gar Wood Industries, Inc.

Model T5 (¾-cu. yd.) excavator and Gar Wood-St. Paul hoist and dump body, the latter in operation.

## Worthington Corp.

A standard HI-UP truck mixer, disassembled to show its various components; also a visual showing how the mixer is manufactured; also a new 16 mm. sound color movie on truck mixers.

## MANUFACTURERS NEWS

**Manitowoc Engineering Corp.**, Manitowoc, Wis., announces the appointment of the following distributors: J. D. Coggins, Albuquerque, N. M., in the northern counties of New Mexico; Caprock Machinery Co., Amarillo, Texas, in northern Texas; Releco, C.A., Caracas, Venezuela, throughout Venezuela; and Walter B. Wolff Co., Stockholm, Sweden, in the Scandinavian countries.

**Caterpillar Tractor Co.**, Peoria, Ill., has announced the election of G. E. Burks as vice-president. He will continue to give administrative direction to the research and engineering departments at four plants. Mr. Burks has been with Caterpillar for 26 years, joining the engineering staff at San Leandro in 1929. He went to Peoria in 1938 as assistant chief engineer in charge of engine design, and was named chief engineer in 1942. He was appointed director of engineering in 1953 and has been director of engineering and research since 1954.



G. E. Burks

**Joseph T. Hyerson & Son, Inc.**, Chicago, Ill., announces the appointment of Harold E. Stavers as sales manager for the Detroit steel service plant. He joined the company in 1913 and has been a sales representative since 1923.

**The Jeffrey Mfg. Co.**, Columbus, Ohio, announces the death on October 5 of Lincoln Kilbourne, general manager of sales of the industrial division. He was 44 years old and had served the company for 22 years.

**Macwhyte Co.**, Kenosha, Wis., announces the death on October 2 of Robert Perry Tyler, vice-president in charge of sales. Mr. Tyler was widely known throughout the wire rope industry. He joined Macwhyte in 1945 as general sales manager, was elected a director in 1946, and appointed vice-president in charge of sales in 1947.

**Stuls-Sickles Co.**, Newark, N. J., recently held a symposium on reclamation welding at Skytop, Penn., which was attended by sales and administrative personnel. Burt H. Payne, chairman of the board, presided. He said the company could look forward to greater opportunities for the sale of manganese products during 1956. Roderick K. Chapin, president and general manager, outlined plans for products.

**Clark Equipment Co.**, Buchanan, Mich., has appointed the following distributors: John M. Shank Co., White Bear Lake, Minn., in Minnesota, Wisconsin, Nebraska, Iowa and the upper peninsula of Michigan; H. A. Davis Power

**FOR THE CONTROL OF ROCK, ORES, ETC.  
TO CRUSHERS, CONVEYORS, ETC.**

## ROSS CHAIN FEEDERS ROSS DROP-BAR GRIZZLY FEEDERS

**ROSS SCREEN & FEEDER CO.**  
100 Quimby Street  
WESTFIELD, N. J.

**ROSS ENGINEERS LTD.**  
11 Walpole Road,  
SURBITON, SURREY, ENGLAND

CANADIAN LICENSEE: E. LONG LTD. ORILLIA, ONT.

Joy 60-BH Drill in operation in a large Southwest copper mine.

Here's  
the drill  
you need for  
**LARGER,  
LOWER-COST  
BLASTHOLES**

the **JOY 60-BH** Super Heavyweight Champion



For high-production open pit mining of copper, as illustrated above, large-diameter blastholes are a *must*! The way to drill those large-diameter holes economically—either in copper ore, or in any other open-pit mining or overburden removal job—is with the Joy 60-BH Super Heavyweight Champion. Here's why: because this Joy rotary drill excels in all three of the features which determine bit penetration:

**ROTATION**—Infinite variation of bit speeds, accurately controlled bit speeds, more power on bit rotation, and constant indication of bit speed and pressure by gauges.

**BIT WEIGHT**—The Joy hydraulic feed, using two 5-foot hydraulic cylinders, is the most efficient and dependable method of applying bit pressure. It is more accurately controlled and less hazardous than other methods.

**CUTTINGS REMOVAL**—Only Joy uses a heavy-duty, industrial-type, water-cooled air compressor to insure more dependable air supply required for efficient rotary-air blast drilling.

Other features include a self-aligning hydraulic automatic chuck, hydraulically raised and lowered derrick, and rod handling device.

The 60-BH, capable of drilling 9" to 12" diameter holes in even the hardest rock formations, is the largest in the outstanding line of Joy Champion "rotary-air blast" drills. Smaller models are the 58-BH Heavyweight for 7½" diameter holes, and the 56-BH Middleweight for 6½" diameter holes. Let us quote on your requirements. Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.

Write for FREE Bulletin 40-27



*Consult a Joy Engineer*

For AIR COMPRESSORS, ROCK DRILLS, CORE DRILLS, HOISTS and SLUSHERS, MINE FANS and BLOWERS

W5W R5506-AG

# JOY

WORLD'S LARGEST BUILDER OF CORE DRILLS, ROTARY BLAST HOLE DRILLS AND MOTORIZED DRILL RIGS

Equipment Co., Dallas, Texas, in the northern half of Texas; Brunken Corp., Ashtabula, Ohio, in New England; New York, New Jersey, eastern half of Ohio, Pennsylvania, Delaware, North Carolina, South Carolina, Virginia and West Virginia; and Richler Brothers, Montreal and Toronto, Canada, in the provinces of Ontario and Quebec.

Iowa Mfg. Co., Cedar Rapids, Iowa, has announced the appointment of C. C. Dunlop as service engineer at the factory in Cedar Rapids, to assist Boyd Titaworth, service manager, on Cedar Rapids crushing and screening plants, bituminous mixing plants and other Cedar Rapids products. He has been associated with the company for 20 years.

Marion Power Shovel Co., Marion, Ohio, announces the appointment of Dudley B. Reed, Jr., as director of advertising and public relations. Harold E. Bonecutter continues as advertising manager. Mr. Reed was formerly manager of public relations for Bucyrus-Erie Co.

Gardner-Denver Co., Quincy, Ill., has established a technical engineering scholarship fund that is part of the Gardner-Denver foundation. The company has granted scholarships to mechanical, mining and petroleum engineers over the years. A total of 11 scholarships or fellowships have been awarded in nine different colleges.

Lippmann Engineering Works, Milwaukee, Wis., has appointed Robert Dankert as sales representative in New York State, New England and the western two-thirds of Pennsylvania.

International Harvester Co., Chicago, Ill., has appointed the following district managers of the motor truck division: M. T. Sprague, Oakland, Calif., to succeed Roy A. Legge, who has retired; G. B. Stewart, Portland, Ore., with R. M. Beauchamp as assistant district

manager; Barr Crawford, St. Louis, Mo., to succeed C. A. Samuelson, who has retired; H. A. Herman, Pittsburgh, Penn.; M. J. Gowen, Fort Wayne, Ind.; and R. W. Maxwell, Richmond, Va.

The Rust Engineering Co., Pittsburgh, Penn., announces that Arthur G. Schuster, structural engineer, died suddenly on September 3 at the age of 64, and that James A. Slater, sales engineer, died also on September 3, as the result of an automobile accident. Mr. Schuster had been with the firm since 1951 and Mr. Slater joined the company in 1954.

Gerlinger Carrier Co., Dallas, Ore., has opened three main parts depots in Oregon, Ohio and Tennessee, according to John Kitzmiller, vice-president in charge of sales. Overnight service on parts anywhere in the United States is now available.

The Raymond Bag Co., Middletown, Ohio, will operate as a wholly owned subsidiary of The Albemarle Paper Mfg. Co., Richmond, Va., according to an announcement by W. F. Lawrence, board chairman, and C. L. Mers, president of Raymond Bag Co.

Link-Belt Co., Chicago, Ill., has announced acquisition of Syntron Co., Homer City, Penn., through an exchange of shares. Syntron will be operated as a Link-Belt subsidiary.

Woodridge Mfg. Co., Sunnyvale, Calif., has appointed the following district representatives: Edward D. Wallace in Minnesota, Wisconsin, Iowa, Illinois, Indiana, Ohio, Michigan and eastern Missouri; T. Robert Kyper in Oklahoma, Kansas, Nebraska, Missouri and Arkansas; and Frank L. Johnson in California, Nevada, Arizona, New Mexico, Utah and Colorado.

Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, Ohio, announces the appointment of J. V. Gunter as district

sales manager in Arkansas, Louisiana, Tennessee, Mississippi, Alabama, North Carolina, South Carolina, Georgia, Florida and parts of Virginia, Oklahoma and Missouri. He succeeds Fred L. Maus who has joined R. A. Young & Son, distributor, Fort Smith, Ark.

Harbison-Walker Refractories Co., Pittsburgh, Penn., has purchased an interest in Fabrica de Ladrillos Industriales y Refractorios, S. A., (Flir) of Mexico, and plans to change the name to Harbison-Walker-Flir, S. A.

The Jeffrey Mfg. Co., Columbus, Ohio, has appointed Chester G. Hawley as general manager of sales for the industrial division. He succeeds the late Lincoln Kilbourne. John Chrytal replaces Mr. Hawley as manager of the O.E.M. sales department.

Howe Scale Co., Inc., Rutland, Vt., has announced the appointment of Edmund L. Fitch as sales promotion manager. He was formerly sales representative at Dayton, Ohio.

Joy Mfg. Co., Pittsburgh, Penn., has moved its Detroit office to 17615 W. McNichols Road.

American Tractor Corp., Churubusco, Ind., announces the appointment of Theodore A. Haller as vice-president and director of engineering. Prior to joining the company Mr. Haller was associated for 23 years with the crawler division of Allis-Chalmers Mfg. Co.

Dorr-Oliver, Inc., Stamford, Conn., announces the recent transfer of the following sales engineers: Thomas C. Reeves to central filtration and industrial division, Dallas, Texas; George H. Koenitzer to Central sanitary division, Cleveland, Ohio; Thomas V. Barton to Eastern filtration division, Stamford; and William M. Smith to Cleveland.

Manitowoc Engineering Co., Manitowoc, Wis., announces the death on October 12 of A. W. Catlin.

## Screens 400,000 Tons of Petersburg Granite without a Mishap!

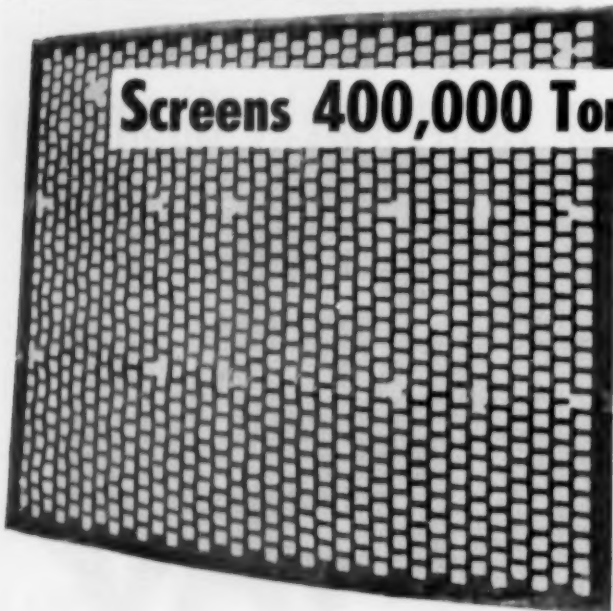
Here's another success story that typifies Hendrick's ability to manufacture Perforated Metal Screens that take the beatings of constant heavy-duty usage yet afford long service life:

**PROBLEM:** One of the Virginia quarries of Sunnyside Granite Co. had trouble screening hard "Petersburg Granite." The granite was so abrasive ordinary screens wore out quickly and had to be replaced.

**SOLUTION:** Hendrick manufactured a screen of ½" thick steel perforated with 1½" square holes. The screen was then heat-treated and double corrugated.

**RESULT:** Over 400,000 tons of Petersburg Granite passed over this one screen before it had to be replaced.

Hendrick Perforated Plate used on vibrating and shaking screens can often mean the difference between profit and loss. To see how you can best benefit from Hendrick's long experience in manufacturing screens for the quarry industry, call your nearby representative today.



**Hendrick**  
MANUFACTURING COMPANY  
47 DUNDAFF STREET, CARBONDALE, PA.  
Sales Offices in Principal Cities

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Wedge Wire • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Trads • Armorgrids



*Here's another Low Cost  
Auto-Vortex Installation  
making a variety of splits  
at Lower operating costs...*

## BELVOIR SAND and GRAVEL COMPANY FINDS NEW EFFICIENCY with AUTO-VORTEX CLASSIFIERS

This Virginia plant converted to Auto-Vortex Classifiers after using other equipment. The result . . . sharper splits than ever before . . . removal of the bulge in the middle . . . recovery of valuable fines formerly wasted. Spectacular, compared with Belvoir's previous equipment, these results are standard for Auto-Vortex plants all over the country.

Though superior in performance, Auto-Vortex Classifiers cost less to install and operate. Cylinders in the A-V Cones, which automatically discharge the coarse products, need no electric power whatever, being rotated solely by the water's gravity flow. Revolving rakes in the A-V Bowl, which settles the fines, require only a 3 HP motor. Power and upkeep economy, and large tonnage capacity, permit competitive pricing with a substantial profit margin.

Your requirements may be met with a single Cone or Bowl, or some combination of the two. But alone or in series, Auto-Vortex Classifiers will deliver sharper separations than any other equipment.

Call or write for our Bulletin No. 81

**CHARLES E. WOOD COMPANY**

906 N. WATER ST. • MILWAUKEE 2, WIS.



A scale model of the Belvoir plant will actually produce three sizes of sand in our booth at the NSGA show in Chicago.

**EHR SAM**

## gypsum and wallboard processing machinery

...WILL MODERNIZE YOUR PLANT FOR GREATER EFFICIENCY

AND BETTER  
PRODUCTS



**PAPER SECTION** for board line paper is fed to board line with proper tension—giving a smooth surface to finished product.



**FORMING ROLL SECTION**—precision rolls run on anti-friction bearings—giving board a uniform thickness throughout.



**MATERIAL STORAGE AND FEED**—stucco bins with drag feeders store and transfer sufficient material for constant operation.



Ehrsam Lathe punch, can be furnished in Reciprocating or Rotary style with board speeds up to 300 ft. per min.

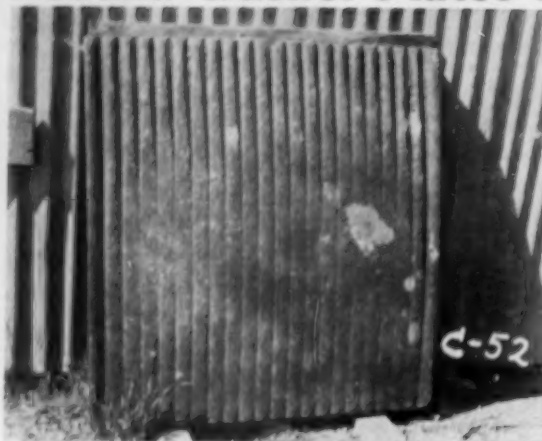


Ehrsam Calcining Kettle to reduce the raw gypsum to workable condition. Several sizes are available in gas or oil fired.

Ehrsam equipment will enable you to get the greatest returns from your plant by cutting maintenance and operating cost. Remember, if you are thinking of one machine or a complete plant, our staff of Engineers is available to you.

The J. B. **EHR SAM** & Sons Mfg. Co.  
ENTERPRISE, KANSAS

## Rebuild Crusher Plates with N.M. MANGA-TONE



Before



After

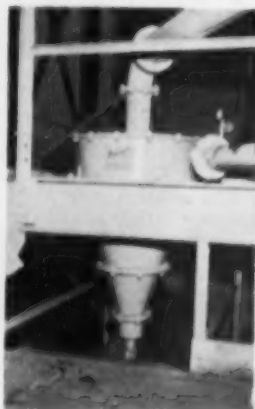
These two pictures tell an interesting story of how to save money on Crusher Plates. Notice in the "before" picture how the corrugations have been worn off in **JUST THREE WEEKS** crushing of hard, round river-bottom gravel.

Now compare it with the second picture showing the plate rebuilt with N.M. Manga-tone. Plant records show that the rebuilt plate was in operation for 32 days before it was removed for another **REBUILDING**.

If you are throwing away your crusher plates, perhaps this data and more we can quote will convince you that real economies are possible by rebuilding with N.M. Manga-tone. Just call in our field man for confirmation.

**THE RESISTO-LOY CO., INC. - Grand Rapids 7, Michigan**

## 25" DURACLONE RECOVERS 5 TONS OF SAND PER HOUR



Installation of 25" Duraclone at California Materials Company plant, Sunland, California.

Designed to recover fine sand from the overflows of washers, the Duraclone keeps sand ranging from minus 30 to plus 200 mesh from the waste ponds, thus enabling producers to meet the most exacting specifications.

A 25" Duraclone in the sand circuit will handle a volume of 700 gpm from the classifier overflows, extracting from 5 to 8 tons of clean fines per hour.

A 4" sand pump, running at about 1400 rpm, and powered by a 20 hp motor, forces the feed to a rubber-lined cone at approximately 18 psi.

### ANALYSIS OF FINE SAND RECOVERY

	% RETAINED	% PASSING
30M	8.7	91.3
50M	43.2	56.8
100M	89.6	10.4
200M	97.7	2.3

FOR COMPLETE INFORMATION WRITE TO

**H. B. LARGE ENGINEERING COMPANY**

267 SO. PARKWOOD AVE.

PASADENA, CALIF.

Phone SYcamore-2-7820

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PERFORATED  
METAL  
SCREENS...

for less from

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NEW CATALOG**

114 pages of full scale hole size and pattern illustrations make it easy to order Standard Stamping's Perforated Metal Screens, the screens that give you:

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- uniform hole size
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Delivery from prime stock on hand, including special high carbon steels! For **FREE** catalog, attach this ad to your letterhead, or phone:

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## BLACK'S DREDGE SLEEVE CLAMPS

STURDY • PRACTICAL • DEPENDABLE • ECONOMICAL



Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U. S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply . . . positive in action. Write for illustrated folder, today.

THE BLACK BROTHERS CO., INC., 303 9th Ave., Mendota, Illinois

## Have You Seen the AGIPELLER®?

**NEW!**  
**INCREASES OUTPUT!**  
**CUTS COSTS!**



**THIS SUCTION DREDGE AGITATOR** (Pat. Pend.) keeps nozzle clean, loosens compacted deposits, crushes oversized stones. Pays for itself quickly. Write for free bulletin. \*Trade mark

**W. H. PFARRER CO.,** 211A W. Wacker Dr., Chicago, Ill.  
Dredge and Pump Engineers

## HINGED PLATEGRIP

### BELT FASTENER No. 500



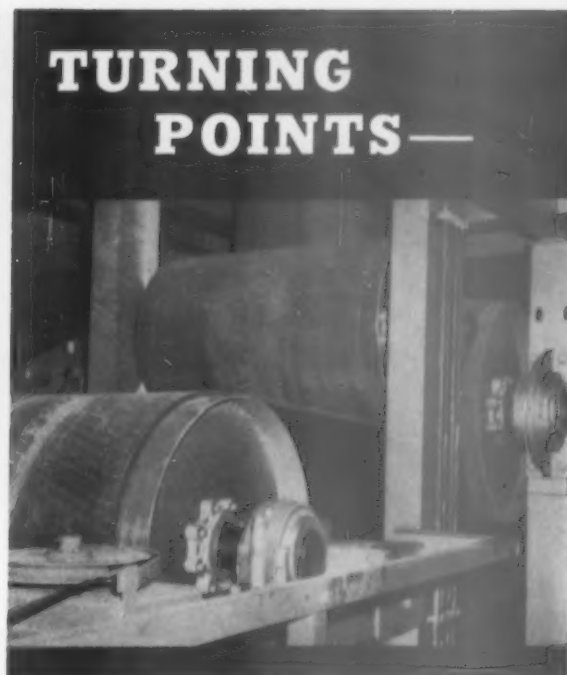
**FOR HEAVY CONVEYOR BELTS OF CHANGING LENGTH**

These heavy-duty belt fasteners make a strong, flexible joint in conveyor belts, belts of any width and of from  $\frac{1}{8}$ " to  $\frac{1}{2}$ " thickness. They offer special advantages in mines, quarries or industrial set-ups where length or position of belt is frequently changed, because sections can be removed or added at will. Joints are opened for this purpose by simply pulling out the hinge pin.

Easily and quickly applied on the job or in the shop. Special design gives deep compression into belting and smooth, flush joint.

Write for Circular

**ARMSTRONG-BRAY & CO.**  
5336 Northwest Highway, CHICAGO 36, U. S. A.



## TURNING POINTS—

Wherever conveyor belts *turn over*, industry turns to the American Pulley Company. From pit or mine to crushing . . . to processing . . . in and out of storage . . . a high portion of recent installations are equipped with American Conveyor Pulleys.

Engineers and operators know they will get pulleys:

**ACCURATELY CROWNED** for true belt tracking.

**EQUIPPED** with the exclusive Wedg-Tite® split tapered hubs to prevent walking on the shaft . . . the only hubs designed specially for conveyor pulley service.

**DESIGNED** on theory, checked by independent research and proven in thousands of tough applications.

**AVAILABLE** with unique Griplex Spiralagging to eliminate slippage and prolong rim life . . . renewable with the pulley in place.

**BUILT TO LAST** . . . by controlled precision methods . . . by pulley specialists with over sixty years of experience.

When you install new conveyors or modernize existing ones, turn to American for Conveyor Pulleys—Built for the Belt . . . over 400 standard sizes.

**STOCKED AND SOLD BY DISTRIBUTORS  
IN PRINCIPAL CITIES**

*The American Pulley Company*  
4212 WISSAHICKON AVENUE  
PHILADELPHIA 28, PA.

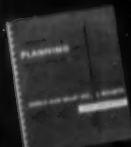
# PLANNING FOR TODAY... *and tomorrow*

The PEERLESS Cement Corporation has for years consistently followed a program of carefully studied plant modernization and new construction. With producing units strategically located to supply their markets, their goals have been: Higher ratio of output to dollars invested . . . lower unit costs . . . constant product improvement.



PEERLESS CEMENT CORPORATION  
DETROIT • MICHIGAN

Throughout this period of growth, the Peerless organization has repeatedly called upon Giffels & Vallet, Inc. to furnish essential planning and engineering services. G & V's extensive experience in the cement and rock products field has also proved an important factor in helping other leading producers in the industry scale down costs and increase output.



A special Planning Brochure has been prepared by Giffels & Vallet, Inc. outlining the comprehensive planning and engineering services available. A copy will be mailed on request.

**INDUSTRIAL ENGINEERING DIVISION**

**Giffels & Vallet inc.**  
DETROIT, MICHIGAN

NEW YORK  
CHICAGO  
HOUSTON  
WINDSOR, ONT.

Engineers Serving Industry for Over Thirty Years



# NEW Subscription Order Form

Please enter immediately my subscription to

## ROCK PRODUCTS for

- ☐ One year at \$2    ☐ Two years at \$3    ☐ Three years at \$4  
☐ Payment enclosed    ☐ Bill me later    ☐ Bill my company

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TITLE \_\_\_\_\_

KIND OF BUSINESS \_\_\_\_\_

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ZONE \_\_\_\_\_

FOR USE OF  
ROCK PRODUCTS  
PRODUCERS ONLY

	1 YEAR	2 YEARS	3 YEARS
U.S. & POSSESSIONS AND CANADA	\$2.	\$3.	\$4.
PAN-AMERICAN	\$8.	\$14.	\$20.
FOREIGN	\$12.	\$22.	\$30.

# PRODUCTS

ROCK PRODUCTS

READY-MIXED CONCRETE



Lifting 80-ft. post-tensioned, lightweight concrete bridge beam made by Basalt Rock Co., Napa, Calif.



GOOD APPEARANCE BUILDS SALES. Duraplastic-made products like these at the Totowa Concrete Block Company, Totowa, N. J., feature rich texture and clean, true edges for customer appeal.

## Duraplastic\* improves product texture...reduces breakage

"We use Duraplastic cement for all our products. It gives them the rich texture and fine finish so important in concrete specialties," reports Victor Agar, owner of the Totowa Concrete Block Company, Totowa, N. J.

Concrete products are easier to produce and sell when made with Atlas Duraplastic air-entraining portland cement. Smooth, cohesive mixes feed easily through the machine... make compact products with more resistance to passage of water... reduce breakage... give sales-promoting good appearance.

Duraplastic costs no more than ordinary cement and

requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For free descriptive booklet, write:

### UNIVERSAL ATLAS CEMENT COMPANY

UNITED STATES STEEL  CORPORATION SUBSIDIARY

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Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

\*"DURAPLASTIC" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

AIR-ENTRAINING PORTLAND

# Atlas® Duraplastic Cement

MAKES SUPERIOR CONCRETE PRODUCTS AT NO EXTRA COST

United States Steel Hour—Televised on alternate Wednesdays—See your local newspaper for time and station.

CP-D-176-C

# INDUSTRY NEWS

## Cover Picture

ON THIS MONTH'S CONCRETE PRODUCTS COVER is an illustration of Basalt Rock Co., Napa, Calif., pre-tension concrete casting yard where a 40-ft. long, 40-ton post-tension beam being transferred to trailers which are used to transport to waterfront where they are loaded on barges for delivery to the bridge construction site. The structural members are made of lightweight concrete, expanded shale, round aggregate. Other products include flat slabs, joists, and channel sections.

## Concrete Shortage

THE FLORIDA CONCRETE PRODUCTS ASSOCIATION is sponsoring a series of short courses in Miami, Miami Beach and Ft. Lauderdale, Fla., from May 11, 1956, to May 18, 1956. The courses deal with production techniques to help produce a better ready-mixed concrete product. The cover "Concrete Shortage" is a maintenance of concrete delivery fleet.

## Open Ready Mix Plant

CAMBRIDGE READY-MIX CONCRETE PRODUCTS, INC., Cambridge, Ohio, has been formed by Frank Andrews and Robert Hall, owners of Andrews Lumber and Box Co., Cambridge, and William Stocker, owner of Stocker Sand and Gravel Co., Gnadenhutten, Ohio. The new company handles sand, gravel, mortar and cement, and a weighing service is also maintained. Three transit mixer trucks are operated. Earl Bennett is office manager, and Augustus Glover is yard manager.

## Adds Products to Line

CONCRETE SECTIONAL CULVERT CO., Fargo, N. D., is producing Thermo-flector concrete block which are said to be strong enough to resist atom-bomb attacks. The blocks are 8 x 8 x 16-in. units, with four staggered cores with aluminum foil sheets inside. The company has also added precast, prestressed concrete girders and columns to its line, as well as precast concrete pipe for highway culverts, etc.

## Open Pipe Plant

FEDERAL CONCRETE PIPE CO., Columbus, Ohio, has started production at its new plant. Thomas H. Monaghan is president of the firm, and Wil-

son is vice president. The new plant is located near the end of the Orange-thorpe Freeway, facilitating service to Orange County, Calif. It is the sixth plant of a group affiliated with the parent company, San Gabriel Ready-Mix of Pasadena, Calif.

## Rock Products Plant

STAR ROCK PRODUCTS is building an electronically controlled plant in Santa Ana Canyon, Calif., at a cost of about \$300,000. The plant will produce 5500 tons daily of road and fill material, concrete aggregate, plaster sand and similar products, when it is completed by 1956. The plant is located near the end of the Orange-thorpe Freeway, facilitating service to Orange County, Calif. It is the sixth plant of a group affiliated with the parent company, San Gabriel Ready-Mix of Pasadena, Calif.

## CONCRETE PRODUCTS NEW OFFICES

● CONCRETE PRODUCTS and ROCK PRODUCTS, effective Dec. 1, have moved to new, enlarged offices. The address is 79 W. Monroe St., Chicago 3, Ill. The telephone number is RA 6-2802.—THE EDITORS.

SILVER CREEK BRIKCRETE MANUFACTURING CORP., Silver Creek, Miss., is manufacturing "Brikcrete" lightweight masonry units in 4- and 8-in. sizes and in 14 different colors. The plant, franchised to serve the Jackson area, has a 4000 sq. ft. building. W. B. George is president.

W. B. GEORGE CEMENT PRODUCTS CO., S. D., has been purchased by Peter Rutten of Plainfield, Ill., and Henry Esser of Chicago, Ill., and Bill Allen, formerly president of the company. No staff or business changes are planned. The company manufactures concrete stave silos, concrete block, and sells ready-mixed concrete and building materials.

WHITE LAKE CONCRETE PRODUCTS CO., White Lake, Mich., recently began ready-mixed concrete operations, utilizing three transit mixers, two 6½-cu. yd. capacity units and a 4½-cu. yd. capacity unit. Everett King, Jr., and John Keith are the owners and operators.

MOBILE CONCRETE INC. has started ready-mixed concrete operations at Denver, Colo., concentrating on custom concrete installations. The company operates a fleet of six transit mixers. Ernest Wilson is president of the firm.

ROBERT D. MCCORMICK has purchased and taken over active management of Hall Concrete Products Co., which is operating under the new name of McCormick's Concrete Products Co. The company continues to produce cinder block, concrete block and concrete roofing tiles.

VANDALIA CONCRETE PRODUCTS CO., Vandalia, Mo., has begun operations at a ready-mixed concrete plant. The company has two transit mixers, a 6-cu. yd. and a 2½-cu. yd. capacity unit. W. B. Smith, Montgomery City, Mo., is the owner, and Don Smith is plant manager.

GEORGE MAYER of Miami, Okla., has started production of colored concrete masonry units with a compressive strength of 5000 p.s.i. Originally designed as a 4-in. veneering stone, the units are being used for fireplaces, walls, planters and other ornamental work.

DILCO CONCRETE PRODUCTS LTD., a recently organized firm, has purchased H. J. O'Connell Cement Products, a concrete block firm of Montreal, Que., Canada. F. H. Dillingham is president and managing director of the new company. Other officers are R. W. Wakefield, treasurer; and Commander F. W. R. Angus, O. K. Ross and Lawrence T. Porter, directors.

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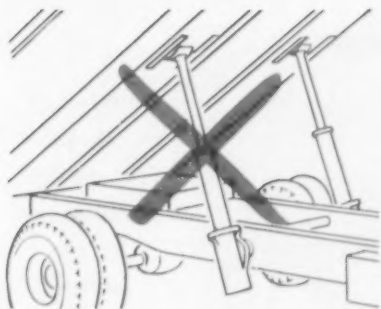
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PRODUCERS ONLY

# GRAVITY dumps the load...in





# ONE second



## Koehring Dumptor<sup>®</sup> has no body hoist

Operator drives up, trips the body-release lever — and *gravity* tilts the 6-yard body 70 degrees. One second later the load is out, and Dumptor is on its way back for the next load. It's as simple and fast as that!

There's no 15 to 25-second wait for slow-acting body hoists — no expensive hoist replacement parts, maintenance or down-time. And, you get the same one-second dumping *every time*, under heaviest loads, in all temperature extremes, because Koehring *gravity-dump* never balks — never wears out.

One-second dumping earns a substantial increase in yardage output, too. For example — take a typical 1,000-foot haul where you would normally make 16 trips an hour. By saving an average of 20 seconds dump-time on each trip, Dumptor gains 320 seconds, or 5.3 minutes more productive haul-time per hour. You get 17½ trips, instead of 16. This, alone, adds 9% to hourly production.

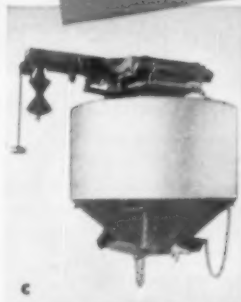
This saving is typical of Koehring Dumptor's basic principle — to reduce all non-productive time to a minimum — to increase work-time for more yards per day. See Koehring distributor for complete information.



**Water Batchers**  
give close quality control of concrete. Semi- or full-automatic. 120 and 240-gal. capacities.



**Cement Batchers**  
6 sizes from 10 to 38 cu. ft. Scale capacities from 700 to 3000 lbs. Semi- or full-automatic controls.



**Single-Material Batcher**  
properly sized for 1¼ cu. yd. batch, 2560-lb. beam capacity for stone — 1520-lb. beam capacity for sand.



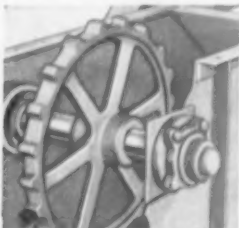
**Batchers Test Weights**  
available in sets of nine 50-lb. calibrated units, and two 25-lb. steel hangers. Assure accurate weigh-batching.



**Yard Bin**  
is ideal for loading trucks where no batcher is required. 9-ft. clearance under discharge gate. Holds 35 cu. yds.



**Elevator Buckets, Chains**  
2 types, 7 sizes of buckets for aggregates and cement. Johnson long-life steel chain has carburized knuckles.



**Chain Sprockets**  
19-tooth, chilled-iron cast iron with heavy split hub, double-rim lugs. Also, 12-tooth cast-chrome manganese.



**Elevator Safety Cage**  
Johnson ladder safety cage, welded to elevator casing, is 28 inches in diameter. Costs only a few dollars per foot.



**Clamshell Buckets**  
all welded, smooth inside and out. Fast-filling, easy closing. Manganese cutting edge. 3 types, 10 sizes, ½ to 3 yds.



**Concrete Buckets**  
3 types: Finger-Tip Control in ½ to 2 cu. yd. sizes; 1 to 4 cu. yd. Johnson-Dravo; and 2 to 8-yd. Lo-Slump buckets.



**Little Titan Scale**  
accurately weighs loaded barrows. Has one, two or three 500-lb. weigh-beams. Light — 2 men can carry.

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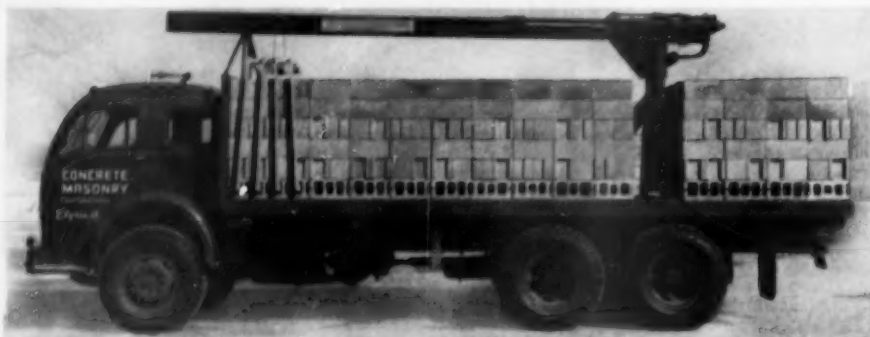
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*...to*

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A continuous self-contained movie in color  
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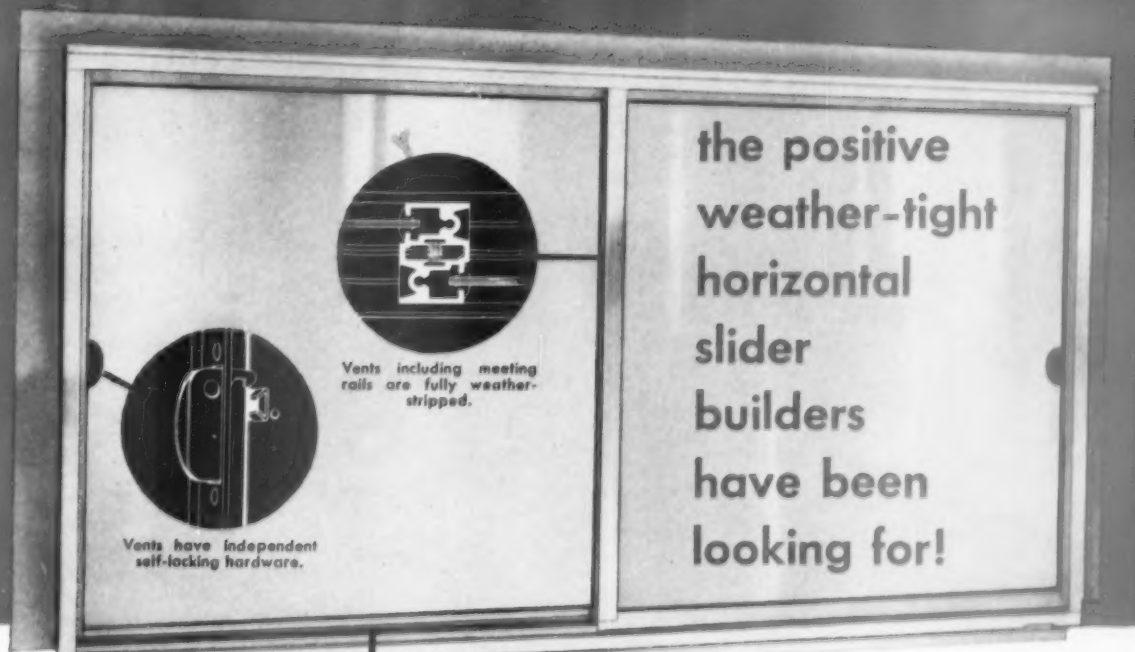
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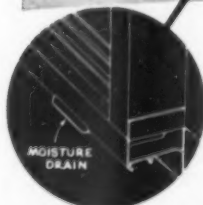
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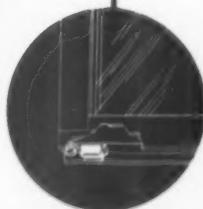
**HORIZONTAL SLIDING WINDOW**



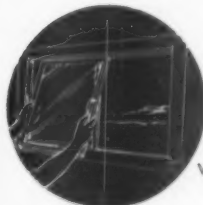
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Tubular sill assures maximum strength. Kewanee design keeps out rain and moisture.



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After months of tireless research and engineering by Kewanee engineers—specialists in building product design for 35 years—the new Kewanee Aluminum Horizontal Sliding Window is here! Its rapid, simple installation is geared to the pace of modern home building. Its weather-tightness, effortless operation and attractive appearance will delight the home owner. The result is the finest Aluminum Sliding Window available. Like all Kewanee quality products it's economically priced, too!

Available in a wide range of sizes.  
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CONCRETE PRODUCTS, January, 1956  
A Section of ROCK PRODUCTS

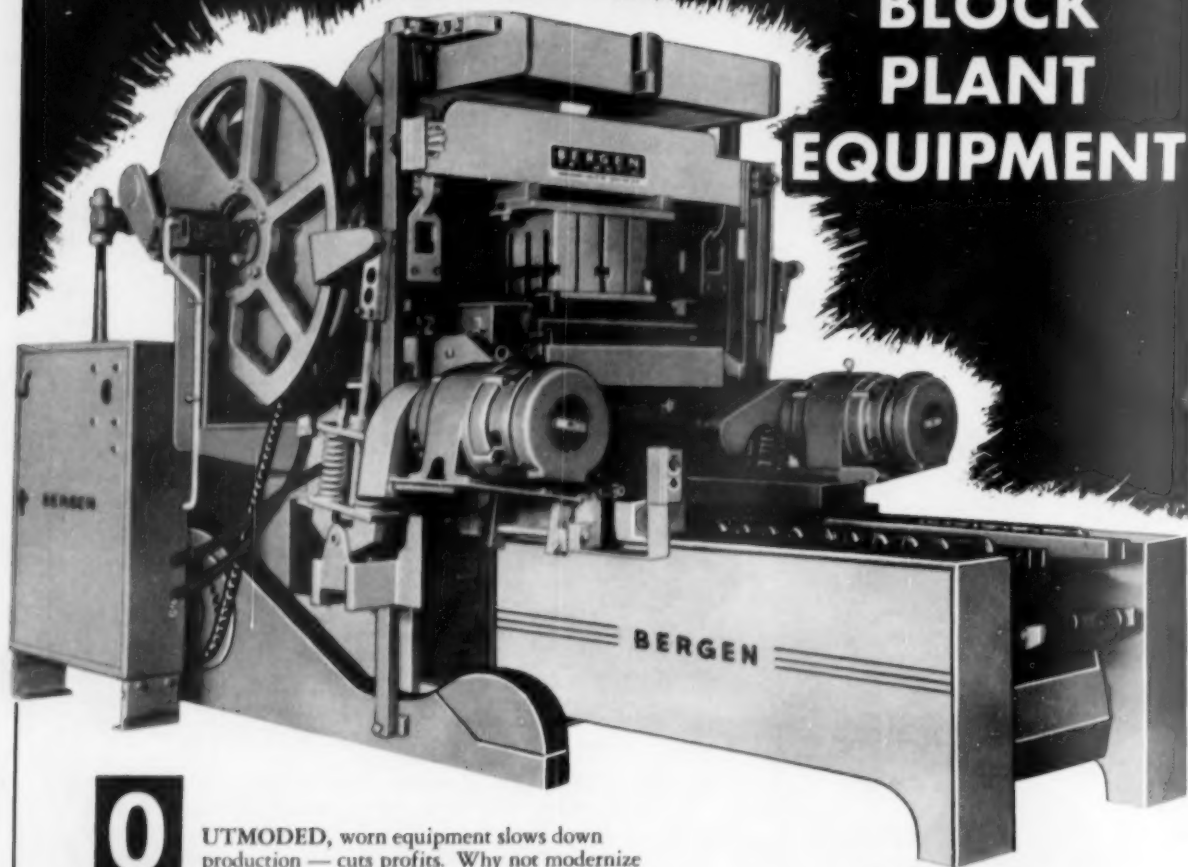
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# The Only Transit Mixer With Enclosed Gear Drive



● All other things being equal, or better, don't you think that a mixer with drum driven by enclosed gears would be preferable to one driven by exposed gears or chains? That's what you get in Westinghouse Transit Mixers—the only mixers with enclosed gear drive.

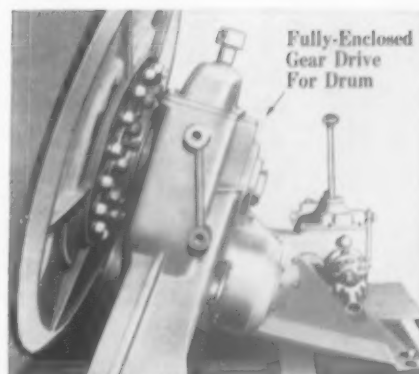
With this valuable patented feature you get a ball-and-socket self-aligning drum mounting, "double-action" mixing drum which accomplishes a quicker, more uniform mix, 2-speed transmission and other features which you'll like.

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The Westinghouse enclosed-gear drum drive requires no more attention than a standard automobile transmission. No chains to break—get too tight or too loose. No pinion and rack to wear out from abrasion. No daily lubrication . . . No stresses are transmitted to any part of drive due to frame flexing in traveling over uneven surfaces.



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In just 10 years since the end of World War II, Columbia Machine has traveled a long way. Its loyal customers have increased many times over. And its staff has grown proportionately. Shown on the facing page are some of the Columbia men who serve you . . . in the home office, in the field, frequently right in your plant. You'll want to meet them at the NCMA convention in New Orleans January 23 through January 26.

Columbia continues to grow in all the ways by which a progressive, vigorous company is measured:

**MANAGEMENT**, with foresight to plan a better product and better ways of serving the concrete industry.

**SALES PERSONNEL**, many of whom have grown up in the business; men who know their wares, who know production problems, and who are qualified to help you with yours.

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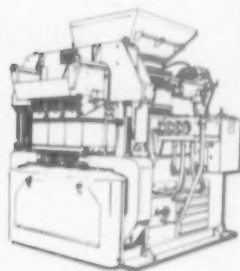
No product can be better than the people behind it. And Columbia is proud to introduce you to the splendid staff pictured here . . . a staff which is always out in front, like the great machines they make and sell!

District Offices in: Wisconsin, Illinois, South Carolina, Mississippi, Florida, New Jersey, Virginia, California, Massachusetts, Montreal, Quebec, and Vancouver, B. C.

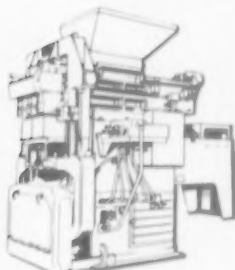
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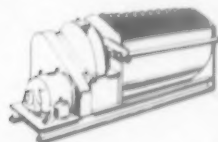
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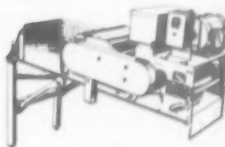
MODEL 12 3-BLOCK MACHINE



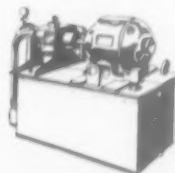
12" HIGH BLOCK MACHINE



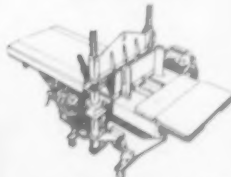
BATCH MIXERS, 12 TO 75 CU. FT



PALLET CLEANERS AND OILERS



PUMPING UNITS



AUTOMATIC BLOCK SPLITTER

FEED DRAWER AGITATORS

POWER ROLLWAYS

SKIP HOISTS

STANDARD AND SPECIAL MOLDS

## GREAT GOING

... with rugged White power engineered right to the job!



**W**HEN the going's rough and the payload heavy—then is the time you're thankful for a White Six-Wheeler!

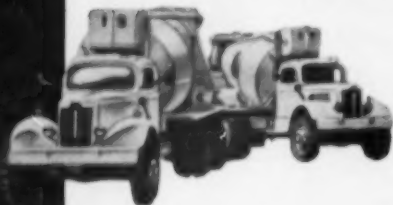
In rugged ready-mix service, for example, Whites set the performance standard because of their quality—with sturdy, double channel heat-treated alloy steel frames... powerful Mustang Engines... heavy-duty axles.

Great going! Yes, because you can carry more payload, do more work, with Whites.

It's the same, no matter what your business, because Whites are engineered right to your job.

Get the whole story of White Quality from your White Representative without delay.

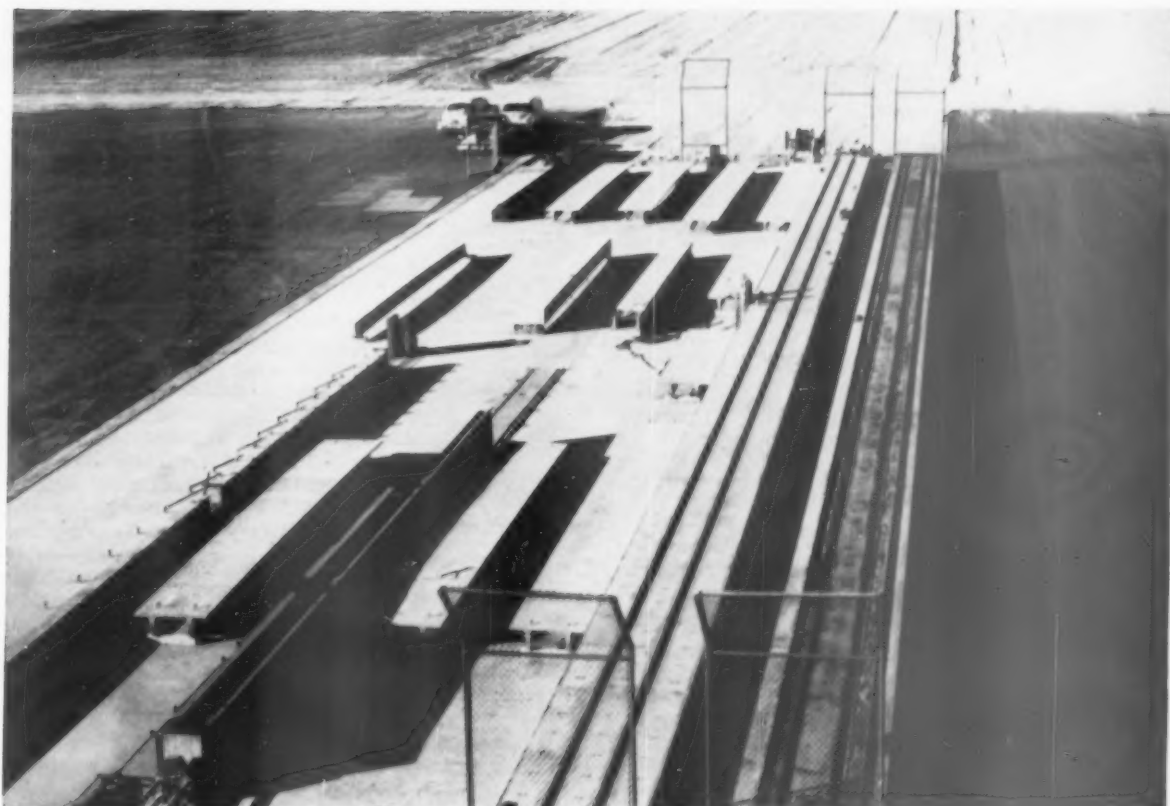
**THE WHITE MOTOR COMPANY • Cleveland 1, Ohio**  
THE WHITE MOTOR COMPANY OF CANADA LIMITED • TORONTO



CONCRETE MATERIALS, INC., Charlotte, N. C., have a fleet of White WC-2264 Six-Wheelers in their service, with  $5\frac{1}{2}$  cu. yd. transit mixers, used as  $6\frac{1}{2}$  yd. agitators, for total payload of 26,000 lbs. R. O. Evans, manager, says, "Auxiliary transmission with both over and under drive is of great benefit. Gasoline mileage excellent. White frames and springs are outstanding. We are proud of our Whites!"

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS





**New post-tension concrete casting yard.** Two permanent double tee beds are shown to the right with a universal pretensioning bed, 27 x 180-ft., to the left. Graded area, above, is for a 54- x 400-ft. addition to the universal bed

## Build New Plant to Make Pretensioned Concrete Units

**TO ANNOUNCE TO THE CONSTRUCTION INDUSTRY** that they are now prepared to manufacture pretensioned concrete products, the Basalt Rock Co., Inc., Napa, Calif., held a Field Day on November 5 for more than 600 architects, engineers, and state, county and city officials of the company's marketing area.

A. G. Streblov, president of the company, welcomed the group and pointed out some of the advantages of pretensioned lightweight concrete elements. "Here is a phase of construction we are all vitally interested in because, although it is old in theory, it is new in application," said Mr. Streblov. "Prestressed concrete is rapidly becoming an important factor in the construction field, and we believe it will substantially effect new concepts in future design—especially when I tell you our figures at this time lead us to believe that our products will

• **Basalt Rock Co., Inc., holds Field Day for architects, engineers and public officials to test large bridge and other structural concrete products**

be competitive with less permanent forms of construction, particularly for long span work."

The primary activity of the day was the testing of six structural members manufactured on the company's new pretensioning facilities. The test program was under the direction of Raymond E. Davis, consulting engineer, who was assisted by Prof. G. E. Troxell and others from the staff of the Engineering Materials Laboratory of the University of California. The entire program was conducted under cover, with seating space provided for all guests within the sub-assembly building of the huge plant. Luncheon was served in the adjoining warehouse.

Tests were made in the morning on a double tee roof slab, 14 in. deep, 4 ft. wide, and 39 ft. 6 in. long, reinforced with three .328 in. dia. seven-strand wires in each leg; a 14 in. deep, 4 ft. wide, and 49 ft. clear span double tee roof slab with 6-ft. cantilevered ends measuring 62 ft. overall and reinforced with seven .328 in. dia. strands in each leg; and a 17-in. deep box bridge unit 32 in. wide and 32 ft. long with 4 in. thick top flange reinforced with twenty-one .328 in. dia. seven-strand wires for H20-S16 loading. Tests in the afternoon were made on a 14-in. deep, double tee floor slab with 2-in. topping for 30 ft. 6 in. span reinforced with three .328 in. dia.



Prof. Raymond E. Davis, consulting engineer, describing Basalt's lightweight concrete aggregate. Jack Streblov may be seen to the left

seven-strand wires per leg; a 16 in. deep, 32 in. wide and 40-ft. long box beam floor unit with 4-in. top flange for warehouse loading, reinforced with twenty-one .328 in. dia. seven-strand wires; and two 65-ft., 42-in. deep tapered roof girders reinforced with twenty-five .328 in. dia. seven-strand wires.

#### Lightweight Concrete

All of the foregoing members were manufactured with Basalt's expanded shale, rounded, sealed particle lightweight aggregate. The use of this material follows two full years of testing high strength, high-loaded cylinders, on which continual measurements have been taken. From these cylinders, it has been determined that volume change and plastic flow of this lightweight concrete with the resultant loss of prestressing force in the steel compares favorably with the known losses for concrete made from sand and gravel aggregate.

The concrete used in all members was designed with a 7½-sack mix, weighed 105 lb. per cu. ft. and at release of prestressing wires had a strength of 3500 p.s.i. At the time of

the test the compressive strength was 4500 p.s.i.

All concrete was premixed in Basalt's precast plant which utilizes an open pan type mixer capable of mixing no slump concrete in less than normal mixing time. This mixer produces higher strengths for a given water-cement ratio than conventional drum type mixers. As in all of Basalt's precast work, mixes were designed and controlled by a fully-equipped research laboratory adjacent to the plant. Laboratory control is considered essential in prestressed work since higher than normal strengths are used and stress can only be applied to the member after it has attained a given strength.

High-strength, seven-wire prestressing strand used has a guaranteed ultimate strength of 240,000 p.s.i. The strands were initially tensioned to 70 percent of their ultimate strength.

#### Test Results

One of the "double tee" roof slabs was loaded to three times design load at which time, due to excessive deflection, (12 in. on a 40-ft. span) and cracking ( $\frac{3}{8}$  in. maximum), the test load was removed. The slab recovered

to a 4½-in. deflection, which would not have been possible in conventionally reinforced concrete. All members were observed to recover completely at loads up to cracking. At design loads maximum deflections were found to be two-thirds that allowed by the codes with some being as low as one-third. Cracking occurred at loads ranging from 170 to 250 percent of design loads.

#### New Facilities

Among the recent additions to Basalt's facilities inspected by the visiting engineers were two 6 ft. wide by 180 ft. long permanent double tee beds which are actually steel lined concrete forms equipped with provisions for curing by radiant heat and live steam. These forms are designed so that by the use of strongbacks the prestressing strands may be "harped" or depressed to increase the eccentricity of the prestressing force at the center of the beams. This permits longer spans with less wire and to a degree controls excessive camber normally inherent in members of this type. The beds are precast sections cast in a combination steel jig and form, post-tensioned together. Additional sections can be added as required. Products manufactured on these facilities, in addition to the double tees, include flat slabs, joists, inverted tee beams and channel sections. Stressing of wires is done individually with a 48-in. stroke jack of Basalt's own design. The hydraulic system which actuates the jack consists of an oil supply tank, Vickers pump and 15-hp. motor. All members tested during the Field Day, with exception of the tapered girders, were manufactured on these permanent double tee beds.

The box beams were a composite section. The highly stressed bottom flange and side members were poured in the inverted position with shear keys and ½-in. dia. mild steel dowels in the bottom leg of the double tee form. When cured the units were inverted, the dowel steel bent up and expendable ¼-in. plywood forms installed between the legs. The 3-in. or 4-in. top flange with conventional mild steel reinforcing was then poured with bridging at the ends of each member, thus forming a hollow box section.

A universal stressing bed, 27 x 180 ft., is parallel to the two double tee beds. All abutments are removable and may be positioned at any point across the 27-ft. width. Removable deadmen are provided 80 ft. from the jacking end so that in effect Basalt has 80-ft., 100-ft. and 180-ft. stressing beds. In addition, a novel "let-down" device has been designed which permits the positioning of the dead end



Precast wall panels positioned on steel frame for commercial building

anchorage plate at any point up to 65 ft. from its normal position. Stressing on the universal bed is accomplished by the use of a 300-ton Rodgers jack and pumping unit. The bed is designed for a 1200-ton total force. Provisions are now being made to add a new 54- x 400-ft. bed.

### Wide Variety of Products

The architects and engineers visiting the plant were amazed at the versatility of the installation and were impressed with the magnitude of this plant constructed solely for the manufacture of precast and prestressed concrete products. In addition to the products being tested, they saw steel forms being made for the first fully pretensioned bridge to be constructed in Northern California. This bridge was designed by Contra Costa County and the pretensioned units consist of 13 - 60-ft. beams, 13 - 42-ft. beams and 13 - 35-ft. beams, all of which will be cast on the universal stressing bed.

Other work in the plant at the time of the demonstration included six acres of 8-in. x 4-ft. x 24-ft. channel slabs with supporting columns and beams for a reservoir in Hayward, wall panels for a supermarket to be erected in Sacramento, wall panels for a two-story hotel to be erected in San Mateo, tan colored wall panels for a commercial building in San Francisco, 2 ft. 6 in. x 4 ft. 9 in. x 46 ft. long channel bridge beams post-tensioned with Stressteel rods for the Arcata bridge, 57 ft. long bridge beams post-tensioned by the Freyssinet system for three bridges in Santa Cruz and 80 ft. long x 4 ft. 6 in. deep x 4 ft. 6 in. wide post-tensioned tee beams, weighing 40 tons each, for the Richardson Bay Bridge.

At the conclusion of the afternoon tests, Prof. Davis spoke briefly on the subject of lightweight concrete aggregate. He pointed out the advantages of expanded shale rounded sealed particle aggregate and said the advent of such high-strength, low-shrinkage aggregate was largely responsible for the successful results of the Basalt tests.

Basalt Rock officials who handled the Field Day details included: A. G. Streblow, president; Don McCall, vice-president and chief engineer; Harold A. Price, manager of Structural Concrete Products Division; Jack Streblow, sales manager of Structural Concrete Products Division; Carl Rollins, director of research; Ray McCann, assistant chief engineer; Jim Tobin, plant engineer, George Amoss and E. F. Henry, field engineers; Ross Rudolph, technical representative and Nute Trotter, plant superintendent.



Erecting 80-ft. long, 40-ton beams at Richardson Bay bridge; 270 similar beams are required for this structure



Testing a 17-in. x 32-in. x 30-ft. 6-in. pretensioned lightweight box bridge beam supporting a concentrated load of 30,460 lb. of steel disks



Two 65-ft. lightweight concrete, pretensioned tapered girders, each designed for 460 lb. per lineal ft. load, being tested at 200 percent of designed load which equaled a concentrated load on the two girders of 67,600 lb.



Aerial view of 40-acre paved area of Barrett Industries plants

## VARIETY of Products Sparks Growth of Barrett Industries

By HUBERT C. PERSONS

**WHAT IS BARRETT INDUSTRIES?** To many people in the building business, Barrett Industries is a large San Antonio, Texas, plant making lightweight concrete masonry units. To others, it is a producer of lightweight aggregate sold under the trade name of Barlite. Many municipal, county and state officials know Barrett Industries as a manufacturer of concrete sewer pipe and drain tile. Still others see Barrett Industries as the operator of a large ready-mixed concrete plant with 15 transit mix trucks and also a premix asphalt plant.

Barrett Construction Co., an affiliate, operates a sand and gravel plant

on the Medina River, eight miles south of San Antonio. In addition to these manifold activities the Barrett organizations are currently developing a residential area in which 56 Barlite masonry homes have been built. Plans are on the boards for the construction of 3000 more concrete masonry houses on a 1000-acre tract of land.

The block plant, pipe plant, ready-mixed concrete facilities and lightweight aggregate kilns and crushers as well as the asphalt plant are all located on 40 acres of hard-surfaced paving. This is asphalt on a caliche base. This paving facilitates the movement of trucks in and out of the vari-

ous plants in any weather, keeps down dust and requires a minimum of labor to keep the premises clean.

### How Clay is Mined

The Barlite aggregate is a processed expanded clay clinker. It is mined on the Barrett property about nine-tenths of a mile from the main plants. Chemical constituents of the aggregate include about 65 percent of silicon compounds, 20 percent of aluminum compounds and 5 percent of iron. Exploratory boring and physical and chemical tests of samples have established that at least 20,000,000 cu. yd. of suitable clay is available.



Overall view of kilns for the production of lightweight aggregate with crushing plant and bins to the left



Overburden averaging about 18-in. in depth is removed with scrapers pulled by Caterpillar tractors. The clay is dug with a  $\frac{1}{2}$ -cu. yd. Quick-Way shovel, loaded into 5 and 8-cu. yd. dump trucks and hauled to a feed hopper at the main plant. These haulage units are 8-cu. yd. Schonrock Cable trucks and a 5-cu. yd. Marion.

From the hopper, a plate feeder conveys the clay to an 18-in. belt conveyor which carries it to a clay disintegrator. This equipment, made by J. C. Steele & Sons, shreds the clay down to sizes from  $\frac{1}{2}$ -in. to dust at the rate of 400 tons per day. At this point the clay is routed to a concrete-floored storage shed where it is held for the next step.

From the clay storage shed the partially shredded clay is carried by belt feeder to a secondary clay shredder, also made by Steele. This reduces it so that 50 percent will pass through a  $\frac{3}{4}$ -in. mesh screen with maximum dimensions of particles being about  $\frac{1}{2}$ -in. thick and 1-in. long. From the secondary clay shredder the material drops through a chute to a belt conveyor inclining up to a pants leg chute which feeds it equally to each of two rotary kilns.

The 6- x 60-ft. kilns rotate one and one half turns per minute. Maximum temperature in the firing zone is 2150 deg. F. Natural gas is the fuel. At the lower end of the kiln the hot clinker drops into a concrete holding pit where it cools gradually and is carried to a stockpile by a  $\frac{3}{4}$ -cu. yd. Buckeye clamshell. About 10,000 cu. yd. of clinker are maintained in the stockpile.

The clinker is taken from the stockpile by either a Trojan Hi-Lift or a Wagner Mobile Scoop and dumped into the feeder hopper for the primary crusher. This is a 24- x 30-in. Pioneer jaw crusher which reduces the material to minus 1-in. A belt conveyor then carries the clinker to an 18- x 30-in. Pioneer secondary roll crusher. Here the clinker is further reduced to  $\frac{3}{4}$ -in. to No. 4 mesh particles with some being minus No. 4 mesh to dust. From the roll crusher the material passes over a 4- x 12-ft. Simplicity three-deck vibrating screen.

To fit manufacturing requirements, part of the flow at this point may be by-passed around the roll crusher to obtain a  $\frac{3}{4}$ -in. to  $\frac{3}{8}$ -in. size. One deck of the vibrating screen separates out these sizes and returns anything larger than  $\frac{3}{4}$ -in. to the rolls.

An alternate crushing set-up is provided with a Williams hammermill which reduces clinker to  $\frac{3}{8}$ -in. size down at the rate of 30-cu. yd. per hr. When the hammermill is used, the material goes into a Williams cyclone



**Lightweight aggregate crushing plant.** On the platform, above, are Arthur Gaddis, shop superintendent and Thurman Barrett, Jr.



**Cubing conveyor and shed in foreground.** In the background, left to right, may be seen lightweight storage bins and crusher building, plant office, cement silos and pipe plant



**Two 6- x 60-ft. rotary kilns** produce clinker for expanded lightweight aggregate from clay raw material



Ready-mixed concrete plant with some of the mixer trucks in the fleet

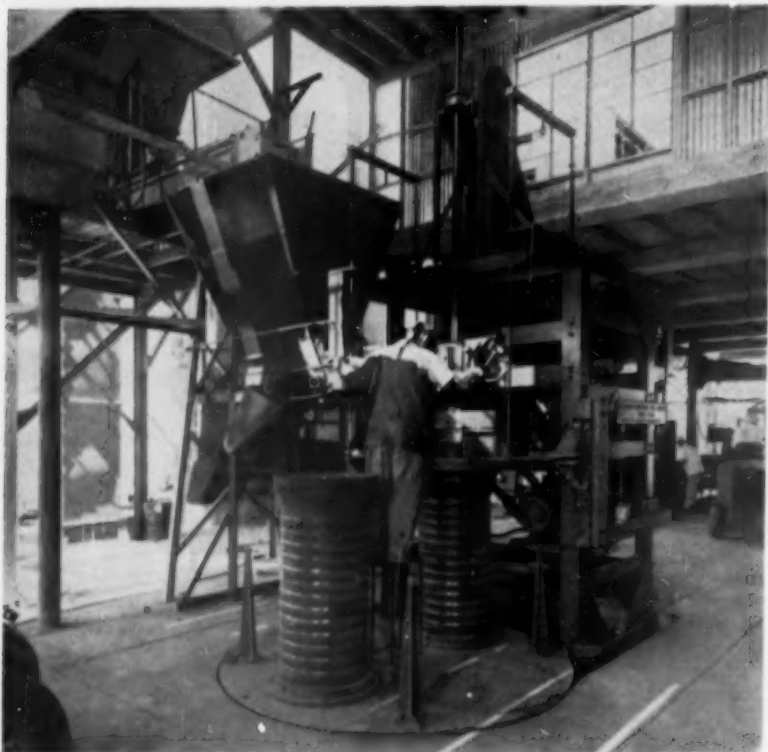
dust collector which removes all minus 100-mesh material. The balance passes over a 3- x 12-ft. three-deck screen built to specifications in the Barrett shop. Two separate screening set-ups are provided so that, when desired, production can be switched from lightweight mortar sand to material suitable for block making.

Extensive testing is currently being conducted in the plant laboratory to determine the pozzolanic action of the lightweight aggregate dust removed by the cyclone dust collector. According to Wm. L. Barrett, Jr., in charge of

the laboratory, results are encouraging.

Barlite block are made by combining  $\frac{3}{8}$ -in. to  $\frac{1}{4}$ -in. lightweight aggregate with a certain amount of particles ranging from minus  $\frac{1}{4}$ -in. to dust and combining this material with carefully controlled proportions of portland cement and water. Samples of the aggregate are taken several times each day and tested in the plant laboratory to insure adherence to A.S.T.M. gradation standards for concrete aggregates.

In addition to quality control work,



Machine for the production of 4 to 36-in. concrete pipe in lengths up to 4-ft.

basic experimental and product development work are carried on in the plant laboratory. Equipment includes a 200-ton Forney compression testing machine which can handle specimens from 4-in. to 12-in. high. The laboratory also has Whitmore strain gauges and a Geo. H. Wahmann Co. constant temperature closet. A Syntrol sieve shaker is used to check gradation of aggregate particles.

### Block Plant Operation

Portland cement for both the block and pipe plants is delivered in bulk trucks and unloaded into an underground receiving hopper. A screw conveyor takes the cement to a bucket elevator which carries it to the top of a 50-ft. tower and into an 800-bbl. storage silo.

No aggregate other than Barlite is used in the block plant. This is delivered from the aggregate plant in dump trucks which deposit it in an underground hopper. A bucket elevator takes it to the batching tower and into one of four 15-cu. yd. compartment bins, according to size. From these bins the aggregate is fed by gravity to the weigh batcher which is equipped with Winslow scales and a Neptune water meter. Batching bins and bucket elevators were made by Ingram Equipment Co. A 50-cu. ft. Columbia mixer feeds the Columbia Model 12, three-block automatic machine. This machine, as operated in the Barrett plant, produces 8 x 8 x 16-in. equivalents at the rate of 1150 block per hr., making six cycles in 57 sec. A second Columbia Model 12, three-block machine of 12-in. high block capacity will be installed early in 1956. This machine produces, among other things, 12-in. high units, each kerfed in the mold so that the mason can break the block on the job. It breaks into four pieces each  $2\frac{1}{4}$ -in. thick,  $3\frac{1}{4}$ -in. wide and 12-in. long, known as Norman brick. These are made in various colors in the Barrett plant.

This block machine will also make so-called Roman brick,  $1\frac{1}{2}$ -in. thick,  $3\frac{1}{4}$ -in. wide by 12-in. long. It will also produce standard 8 x 8 x 16-in. sizes, 12- x 16-in. silo block tongue and groove staves, 18- x 24-in. meter boxes and one foot length of drain tile from 3-in. to 12-in. in diameter. The newest block machine and the pipe plant are each served by a 50-cu. ft. Columbia mixer.

### Curing Procedure

The Barrett Industries plant has eight curing kilns for block with capacity for 8500, 8 x 8 x 16-in. equivalents. There are two larger curing rooms used for concrete pipe. Block on racks are held in the curing kilns

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at atmospheric temperature and humidity for 2 hr. to get an initial set. Wet steam is then turned on until the temperature reaches 180 deg. F. The block are then held at that temperature for 8 hr. by continued injection of steam and by use of radiator pipes. The steam is then turned off; and, when the kiln has cleared, the block are ready to be moved to the cubing area. Steam is provided by a 150-hp. gas-fired boiler. In the cubing area, the block are inspected on a moving belt conveyor under roof. All imperfect block are removed before the cubing operation.

In the block operation, there are three storage silos for crushed aggregate, each with a capacity of 500-cu. yd. The plant produces 125 different sizes and shapes of block. Approximately one million units are stockpiled in the yards. Construction for the base hospital at Lackland Air Force Base is consuming half a million standard Barlite block. The same type of block are being delivered for government projects at Laredo and Victoria, Texas. The plant also makes precast lightweight aggregate joists to meet engineers' specifications.

Barlite colored stone is cast in 11 different colors. About 100,000 sq. ft. of this special facing material in dimensions of 3 $\frac{3}{4}$ - x 2 $\frac{1}{4}$ - x 17 $\frac{1}{2}$ -in. are kept in stock. Available colors include: charcoal gray, Georgian buff, pearl gray, crimson, Chinese yellow, forest green, two shades of pink, two shades of brown and a white. A 24-in. Columbia automatic block splitter is used in producing the split block. This machine has the capacity to split block up to 24-in. wide and 8-in. thick. It is self-feeding and adjustable to a speed of 17 block per min.

Where it is desired, smooth faces on the special block are provided by the use of carborundum stone grinders driven by 30-hp. Master motors. These grinders can dress 400 block per hr.

The plant also uses a combination saw and breaker built in the company shops. This device produces sawed edges and broken-face units, 2 $\frac{1}{4}$ - x 4- x 18-in.

#### Pipe and Ready-Mix Plants

Both the Barlite lightweight aggregate and sand and gravel aggregate are used in the Barrett Industries pipe plant. Diameters from 6-in. to 18-in. bell and spigot sewer pipe are being cast on a McCracken pipe machine. The Model T, McCracken pipe machine is equipped to produce concrete pipe in sizes from 4-in. to 36-in. in 3 or 4-ft. lengths. The pipe plant also makes and stocks precast tongue and groove manhole sections 4-ft. in diameter and in one, 2 and 3-ft. heights.



Automatic 24-in. block splitter in operation

The Barrett Industries ready-mixed concrete facilities are really two connecting plants. With weigh batcher and storage bins, there are two complete batching set-ups. There are eight storage bins for sand, gravel, lightweight aggregate and different sizes of each. There are also two cement silos each holding 500 bbl. Daily capacity of the ready-mixed concrete plant is 700 cu. yd.

A fleet of 15 $\frac{1}{2}$  transit mix trucks of 5-cu. yd. capacity operate out of the plant. All the concrete is mixed in transit. Deliveries are made within approximately a 6-mile radius of the

plant. A Mixermobile with a 2-cu. yd. combination skip loader and bucket is used when necessary to deliver ready-mixed concrete for roof decks or elevated forms in the field. Of the 15 transit mix trucks, three are Rex and 12 are Challenge.

Barrett ready-mixed concrete is being used on the south leg of the San Antonio Expressway. The company has supplied more than 25,000 cu. yd. of ready-mixed concrete for buildings at the Kelly Air Force Base.

Sand and gravel aggregate for the ready-mixed concrete plant comes from a gravel plant on the Medina



Block machine in operation. Left to right: Wm. L. Barrett, Jr.; Dr. W. B. Mather, Thurman Barrett, Sr., and John E. Funnell. Dr. Mather and Mr. Funnell are from the Southwest Research Institute





**Three generations of Barretts.** Left to right: Wm. L. Barrett, Jr., Thurman Barrett, Jr., Mark Barrett, and Thurman Barrett, Sr.

River, eight miles south of San Antonio. This is operated by Barrett Construction Co., an affiliate. Deliveries are made in International dump trucks.

Material is excavated with a 1-cu. yd. Koehring shovel and a 1-cu. yd. Link-Belt dragline. It is loaded directly into trucks which dump into a feed hopper, thence by a belt conveyor to a 6- x 16-ft. scrubber and through a conical screen to a sand settling tank. The coarser sand goes through three spigots to a screw conveyor leading to a stacking belt.

Sizes which do not go through the conical screen, about minus 4-in. or above, go to a three-deck screen, the top deck of which has a 2-in. mesh, and below it are a 1½-in. mesh and a No. 4 mesh. The plus 2-in. material goes to a Universal jaw crusher where it is reduced to about 1½-in. diameter with the throughs going to a stacker belt.

In addition, the plant has a small pea gravel scalping screen at the output end of the lower deck. A small part of the pea gravel, (¾-in.) is separated from the 1¼-in. and goes through a pea gravel crusher. Throughs

from this crusher, together with material from the jaw crusher and main roll crusher are carried by belt conveyor to a three-deck, 4- x 10-ft. scalping screen. The ¾ or ¾-in. aggregate sizes are separated out as desired and sent to storage bins. Oversize, plus ¾ or ¾-in. material, is returned to the main three-deck screen.

Sand and gravel operations and sales are conducted by Barrett Construction Co. which sells both to Barrett Industries and other users.

#### Asphalt Plant

The Barrett asphalt plant produces premix asphalt, either hot or cold, for paving streets, parking lots and driveways. The principal mix is a blend of ¾-in. to No. 4 pea gravel with crushed pea gravel and fine silica sand, (minus 10M to dust.) The material first flows by gravity from vertical bins to an 18-in. belt conveyor. This belt, with a capacity of 30 t.p.h., carries the material to a 4- x 24-ft. rotary dryer. The dryer, fired at approximately 280 deg. F., discharges into a bucket elevator which carries the mix to a Barber-Greene 3½-deck split screen. Here it is separated into four sizes which are again combined at the Ingram weigh batcher to meet state specifications.

The asphalt aggregate is then combined with OA 90 asphalt oil and "Col-Tex" flux which are heated to 250 deg. F. Deliveries are made in specially prepared dump trucks.

Mobile equipment used for various purposes in the yards of the Barrett Industries plants include two 4000-lb. Baker-Lull yard loaders, five 6000-lb. Clark and two Truckman 4000-lb. lift trucks. Block deliveries are made with Hobbs and Trailmobile trailers.

Facilities in the plant area include a completely equipped machine shop for maintenance and repair of trucks

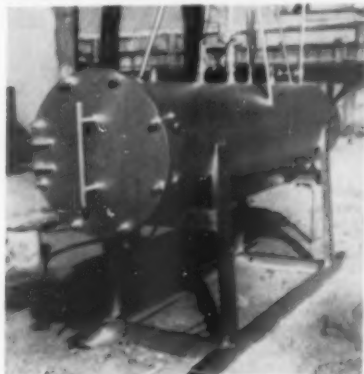
and plant machinery. The shop also has built many pieces of equipment to fit special needs. Shop machinery includes a drill press, two lathes and shapers, band saw and seven welding machines.

Two 1250-ft. artesian wells supply water for the Barrett plant operations and for irrigating 300 acres of farmland adjoining the plant area. One of the wells, used for irrigation, has a 14-in. casing.

Barrett Industries is a partnership consisting of Thurman Barrett, Sr. and Thurman Barrett, Jr. Key personnel in the operations include: William L. Barrett, Jr., general production superintendent; W. E. Overby, general sales manager; John W. Tarlton, superintendent of the block and pipe plants; J. C. Gayle, Jr., superintendent of the batching plant; Floyd Collings, superintendent of the gravel plant; Arthur Gaddis, shop superintendent; and Cliff Benoit, superintendent of the asphalt plant.

During 35 years in the real estate development business in San Antonio, Thurman Barrett, Sr., built the roads and streets into and around these developments. During that period he acquired sources of the base materials essential to asphalt street paving. In 1951 he established a ready-mixed concrete plant, but he had for years been studying the possibility of producing lightweight aggregate to make concrete block. In 1948, Mr. Barrett bought a block machine from the Columbia Machine Works but never used it as he had not yet developed a source of lightweight aggregate. In 1952 the aggregate problem was put up to Dr. W. B. Mather, chairman of the mineral technology department of Southwest Research Institute of San Antonio. Studies conducted by the staff of that organization and by Wm. L. Barrett, Jr., revealed suitable deposits of clay in adequate quantity on some land already owned by Mr. Barrett.

A newer block machine was purchased from Columbia Machine Works and the Barlite aggregate and block plant began operations in July, 1954. The asphalt plant was set up a few months earlier.



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Left to right: Howard F. Peckworth, managing director, A.C.P.A.; A. W. G. Clark, president, A.C.P.A., British Columbia Concrete Co., Ltd.; A. T. Goldbeck, engineering director, National Crushed Stone Association; and E. F. Bepalow, Choctaw, Inc.

• American Concrete Pipe Association, Annual Short Course School, covers specifications, aggregates, concrete mix design, sales promotion and new products

# PIPE PRODUCERS

## Study Manufacturing Problems—New Products

A RECORD ATTENDANCE of 161 coupled with a well-balanced program marked the American Concrete Pipe Association's 5th Annual Short Course School held November 14-16, 1955, at the Chase Hotel, St. Louis, Mo. Keen interest in industry problems was displayed at each of the six regular sessions and one informal evening get-together. Papers were presented on pipe specifications, crushed stone aggregates, concrete technology, rubber gaskets, concrete mix design, a new concrete bonding agent called Concrete Glue, calcium chloride, testing pipe cores, combatting sales promotion by competitors, and social security. The concluding day was devoted to panel discussions on manufacturing problems. Several interesting movies on pipe and related industries were shown; four of these were prepared by member companies.

In his welcoming address, A. W. G. Clark (B.C. Concrete Co., Ltd., Vancouver, B.C.), association president, discussed the friendly relationship existing between Canada and the U.S., pointing out that the boundary between the two nations is becoming more and more invisible. He referred to two major studies currently being undertaken by the association. One concerns a new design for large diameter pipe (up to 120 in. dia.) placed under heavy fill. Mr. Clark thought that the association design committee would have a compromise design ready for presentation at the next annual convention to be held in Colorado Springs, Colo., on March 6 to 10, 1956. The second study relates to the possibility of the association establishing district offices in order to provide

greater assistance in industry problems and promotion on a regional or local level.

Following a brief introduction to the short course school subjects, John G. Hendrickson, association research engineer, read a paper for Howard G. Curtis, Head, Canals and Pipelines Section, U. S. Bureau of Reclamation, Denver, Colo., who was unable to attend. The paper was entitled, "Specifications, What, Why, and How." Specifications were described as a group or collection of explicit or detailed statements or enumerations, setting forth dimensions, materials, and method of performance for a product, structure, or engineering work. It was emphasized that "good" specifications are fair to both manufacturer and buyer and do not unduly describe the operation or direct the method. They are necessary for standardizing products and result in saving time and money for both manufacture and buyer. In describing the "how" of specifications, the speaker

briefly outlined the steps involved, including the formation of a committee and sub-committees, initial drafting of the specification by a sub-committee, revision and balloting by the main committee, and finally formal adoption as a tentative by A.S.T.M. Generally, a 3-7 year waiting (trial) period follows before the tentative is either adopted as a standard (in its original or revised form) or is dropped. The entire process is ordinarily a long one; and the speaker added, it is generally impossible to write a complete and perfect specification which will satisfy all concerned. Committee members are drawn from manufacturer, consumer, and general interest groups, the latter including testing laboratories, universities, equipment manufacturers, and editors.

The speaker pointed out that 1950 marked the beginning of a new era for concrete pipe industry specifications. Prior to that time specifications

(Continued on page 205)



Staff members of A.C.P.A. Left to right: John A. Ruhling, Washington representative; John G. Hendrickson, research engineer; and Thomas K. Breiffuss



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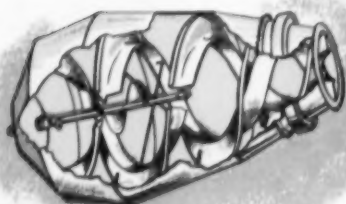
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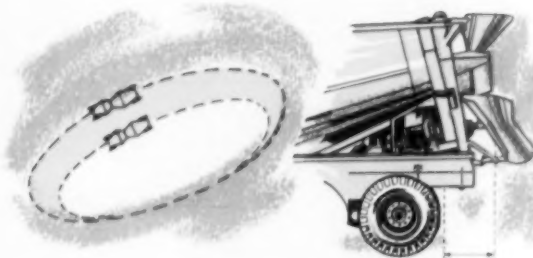
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**Panel on manufacturing problems.** Left to right: Russell Englehart, Continental Concrete Pipe Co., Blue Island, Ill.; A. J. Stocker, National Concrete Products, Inc., Beaumont, Texas; E. F. Bessalaw, Choctaw Inc., Memphis, Tenn., moderator; Henry Schmidgall, Hancock Concrete Products Co., Hancock, Minn.; and George B. Richmond, Union Concrete Pipe Co., Ceredo, W. Va.

had remained static for long periods. After 1950, numerous changes were adopted by Committee C-13 on concrete pipe, as a direct result of the growing and expanding use of concrete pipe, new manufacturing methods, etc.

An important feature of A.S.T.M. specifications concerns inspection of the finished product. According to Mr. Curtis, good inspection is advantageous to the manufacturer, since it serves as free and efficient supervision, thus saving time and money; poor inspection, on the other hand, demoralizes labor and may result in an inferior product.

Mr. Hendrickson also summarized the status of several concrete pipe specifications, including C-14 (unreinforced sewer pipe), C-75 (reinforced sewer pipe), and C-76 (reinforced culvert pipe). He stated that in the new (1956) printing of C-14, the fill test will replace the hydrostatic test in the standard, the latter becoming an optional (but not alternate) test by mutual consent of producer and buyer. In addition, in the 3-edge bearing test, a steel I-beam replaces the 6 x 6 wooden beam block as the upper bearing. Among the changes incorporated in C-75 and C-76 (now undergoing printing) are (1) provision for lift holes in the pipe to facilitate handling

on the job, (2) cores or cylinders will be permitted for testing compressive strength in pipe 72-in. or larger in diameter, and for smaller pipe, cores or cylinders may be used if agreed upon by both producer and purchaser (otherwise the 3-edge bearing test is specified); and (3) where two cages are required, as much as 60 percent of the steel (instead of 50 percent) may be used in the inner cage (where the stresses are higher). It was also announced that new tentative specifications C361T (low internal pressure sewer pipe) and C362T (low head pressure pipe) will be available in December. Mr. Hendrickson stated that the revised C-14, C-75, and C-76 specifications will be included in the new edition of the *Concrete Pipe Handbook*, which is scheduled to be published early in 1956.

In an illustrated talk on "Properties of Crushed Stone Aggregates," A. T. Goldbeck, director of engineering, National Crushed Stone Association, Washington, D. C., first discussed the geologic classification of rocks, pointing out the types best suited for concrete aggregates. Major rock types outlined were igneous, including coarse-grained intrusives (granite, etc.) and fine-grained extrusives (trap rock and basalt); sedimentary, including the calcareous limestones and dolomites and

the clastic siliceous types such as sandstone, shale, and chert; and metamorphic, including the foliates (gneiss and schist) and the non-foliated (marble, slate, and quartzite). He pointed out that limestone is the major type quarried, although igneous rocks are more abundant at the earth's surface.

Mr. Goldbeck also discussed various laboratory tests for aggregates, such as hardness, abrasion, toughness, and soundness (sodium sulphate). Of major importance, he stated, is the Los Angeles Rattler (abrasion) test, which involves placing a 5000 g. sample of aggregate plus a charge of steel shot into a 20- x 28-in. cylinder and rotating the drum 500 times. The amount of fines resulting is used in computing the loss of wear. Experiments show that the flexural strength of concrete varies inversely with the Los Angeles loss of the concrete aggregate.

The speaker also discussed tests for determining the adhesion of mortar to various aggregates; results indicate that rough limestone and dolomite adhere better than limestone having smooth conchoidal fracture or gravel. Another test described showed that a dust coating on stone particles appreciably reduces concrete strength (roughly, the percentage of dust equals the loss of the strength); generally, more than 1½ percent dust is undesirable in concrete aggregate. In discussing alkali-aggregate reaction, Mr. Goldbeck pointed out that certain pozzolans have been used successfully to overcome the problem. He also stated that not all cherts are deleterious in concrete aggregate.

The homlier aspects of "Concrete Technology As Applied to the Manufacture of Concrete Pipe" were described by Herman G. Protze, Materials Technologist, Boston, Mass. At the outset he emphasized that manufacturers should first explore the better control of the basic constituents in concrete before spending excessive time and money on refinement of minor variations which may affect the end product only slightly. He claimed that variation in the basic materials may affect the quality of the resultant product by an unpredictability of as much as 25 percent, which if narrowed down, could save at least 5 percent in operating costs and at the same time result in a better pipe. Cement, aggregates, concrete consistency, admixtures, machinery, and curing were the major items considered by Mr. Protze.

The speaker stated that portland cements may vary widely in physical characteristics (such as workability, bleeding, strength, strength-gain, etc.) due to the age of the clinker, fineness



**Panel on manufacturing problems.** Left to right: G. M. Neff, Neff Concrete Products Co., Danville, Ill.; A. L. Wilson, Gifford-Hill Pipe Co., Dallas, Texas; Carl A. Bluedorn, Zeidler Concrete Products Machinery Co., Waterloo, Iowa, moderator; Fred Spiekerman, Spiekerman Concrete Pipe Co., Lodi, Calif.; and Paul H. Johnson, Independent Concrete Pipe Corp., Mishawaka, Ind.

of grinding, types of grinding aids employed, etc. Concerning the latter variable, certain grinding aids may be used which impart air-entrainment to the cement; this may or may not be desirable in certain types of pipe. He thought that the standard A.S.T.M. test for cement strength does not indicate the ultimate strength quality of cement in the concrete product. Consequently, Mr. Protze has found it desirable to develop a 24-hr. proof test for classification of cement (strength) quality for each car shipped. The test involves making a wet mixture of concrete using a 1:2:3 mix of cement, Ottawa sand, and graded  $\frac{3}{8}$ -in. trap-rock. Distilled water is added to produce a 4-in. slump at the end of 8 min. of mixing. Tempering water is then added to maintain this consistency for a 30-min. period. This type of test gives credit to those cements which require less water, and penalizes those which require more water, or which show flash setting tendencies. Following this initial test, 3- x 6-in. cylinders are made and broken after 24 hr.

In discussing bleeding, Mr. Protze stated that high bleeding cements are generally desirable for centrifugal pipe or machine pipe because clear water will remove itself promptly from the mixture without carrying with it a cement slurry; consequently, stronger mixtures with less surface imperfections result. He described a simple bleeding test based on the relative heights of supernatant water and settled paste in a prepared mixture measured after various time intervals. He found out that at the end of a 4-hr. period, the amount of bleeding may vary from 0 to 20 percent, depending upon the type and brand of cement.

In discussing aggregates, the speaker pointed out that high quality pipe is being produced in various parts of the country in spite of widely varying aggregate types being used. In all cases, however, the manufacturer uses the best aggregates available and controls their proportioning, uniformity of gradation, and cleanliness with reasonably rigid limits. Mr. Protze believes it best to use a sound silica/granite fine aggregate having a fineness-modulus of 2.90 and 15-17 percent minus 50 mesh, and a hard, well-graded  $\frac{3}{8}$ -in. coarse aggregate having a F.M. of 6.60 and with at least 40 percent minus  $\frac{3}{8}$ -in. The combined F.M. should be approximately 4.30 for machine pipe and between 4.80 and 5.10 for centrifugal pipe, depending upon whether the cement factor is 6 or 9 sacks per cu. yd.

Once having established the optimum F.M. for aggregate of a given type and size of pipe in a given locality, it is important to maintain that



Left to right: Chester D. Schwar, Zenith Concrete Pipe Co.; Robert Spiekerman, Spiekerman Concrete Pipe Co.; Eph Dyer, Jr., Western Concrete Pipe Association; Fred Spiekerman, Spiekerman Concrete Pipe Co.; and Herman G. Protze, materials technologist, one of the speakers

quality within a very narrow range, say plus or minus 0.10 in the F.M. of both fine and coarse aggregate and the gradation on each sieve within 2 percent of the average optimum. He added that the weighted average F.M. of the blend should be maintained within plus or minus 0.05. With this type of control, savings of two or more sacks of cement per cu. yd. of concrete may be attained.

Uniformity of consistency is another important aspect of concrete control, since it affects the amount of bleeding, pressure on the forms, production of bubbles, etc. Mr. Protze recommended use of the Kelly ball for determining consistency of wet mixes and a small vibrating table (using a scalp vibrator) for dry tamp concrete. He said the standard slump test and the rub test are inadequate.

With the aid of poster illustrations, A. J. Reto, field engineer, Hamilton Kent Mfg. Co., discussed "Characteristics of Rubber as Applied to Sewer Pipe Couplings." Mr. Reto stated that the growth in the use of rubber gaskets has been phenomenal and that a growing number of specifications are calling for rubber gaskets. He described the many synthetic rubber and rubber-like products developed since World War II, and their physical characteristics, such as tensile strength, elongation at break, compression set, hardness, etc.

In a talk, "Design of Concrete Mixes and Demonstrations of Basic Calculations of Yield and Batch Weights," E. M. Brickett, Hume Pipe of New England, suggested that the producer establish an optimum aggregate gradation curve based on sieve analysis studies and stick to the curve in order to manufacture uniform pipe. He recommended plotting the curves on semi-logarithmic graph paper, using the natural (y) scale for cumulative percentage retained on the various sieves and the log (x) scale for the various sieve size openings (e.g. pan, 100-, 50-, 30-, 16-, 8-, 4-mesh,  $\frac{3}{8}$ -

$\frac{1}{2}$ -, and  $\frac{3}{4}$ -in., respectively.) In making sieve analyses, the speaker suggested weighing the various size fractions individually rather than combining them, thereby avoiding any cumulative error. Curves for fine sand, coarse sand, and coarse aggregate were shown, and the method for obtaining the curve for a blended mixture was demonstrated. The speaker referred to a good mix for spun pipe as 33 percent  $\frac{3}{4}$ -in., 22 percent  $\frac{1}{2}$ -in., and 45 percent sand.

A talk entitled "Bonding New Concrete to Old" described a new bonding agent called Concrete Glue; it was given by K. E. Logan, General Material Co., St. Louis, Mo., substituting for R. F. Powell, company president, who was unable to attend. The product is a liquid plastic which is brushed onto the old concrete surface and allowed to dry for 15 to 30 min. before the new concrete is applied. According to the speaker, Concrete Glue has already been used successfully in patching industrial floors. Possible applications to the pipe industry, he pointed out, include use as a joint material, supplementing or possibly even replacing rubber gaskets; for making specials and fittings; and for repairing bells, etc. It should also prove useful in manufacturing septic tanks and other precast products. For application, the surface should be cleaned but need not be roughened. Approximately 200 sq. ft. of surface can be covered with one gallon. In certain applications the material can also be mixed with the new concrete (one pint per bag of cement), thereby producing a highly wear-resistant surface.

In a talk on "Calcium Chloride in Concrete," M. C. Adams, field engineer, Calcium Chloride Institute, discussed the value of calcium chloride and its use in steam curing. Recommended practices call for use of one percent by weight of cement in temperatures over 70 deg. F. and up to 2 percent for under 70 deg. F. The

(Continued on page 231)

# Concrete Products Industry Marks Up A New Sales Record

**T**HE CONCRETE MASONRY INDUSTRY had an excellent year in 1955 that undoubtedly established a new record for volume of units sold. This appraisal is based on a very generous response from readers of **ROCK PRODUCTS** and **CONCRETE PRODUCTS** to our year-end letter requesting comments on many aspects of business.

Fully 74 percent of the industry, according to our very large sample, had a volume of business that exceeded 1954 and the increases were substantial. The average of increases reported was approximately 20 to 25 percent. The range was from five percent to 100 percent. Fifteen percent had about the same volume of business for the two years and ten percent had reduced volume in 1955. Extent of the decreases reported, percentagewise, were moderate.

This would indicate that volume of business for the entire industry has now far surpassed the figure of approximately 2 billion 8-in. equivalent units that has held for several years. When coupled with price increases reported, a volume of business likely in excess of \$500 million annually is indicated. A further rise is anticipated in 1956, according to majority appraisal.

The price structure was generally improved in 1955 with 40 percent reporting price increases. The increases ranged from four to ten percent with an average of five percent which is about one cent per 8-in. equivalent unit. Forty-five percent had no price increase and 15 percent sustained price reductions because of local competitive conditions.

Looking ahead into 1956, the business climate is good. Seventy-two percent expect to increase their volume of business, many of whom estimate that the rise will be 10 to 15 or 20 percent. Twenty percent expect 1956 volume to hold at 1955 levels and eight percent expect a drop. Further price increases are expected in a few areas.

No specific trends in distribution of business were noted when considering the nation as a whole, but four times as many reported less volume for housing as compared to those with increased business in that field. Tighter financing was given as the main reason. There was evidence that higher priced and larger homes are being built of masonry units in some areas.

By **BROR NORDBERG**

There were more reports of increased volume for commercial, industrial and institutional construction than there were for decreases in residential construction. School construction is becoming a very large factor in the total construction for many producers. Farm construction continues to be relatively unfavorable. Producers of stave silos all reported substantial declines in volume, on the order of 40-50 percent. Drought conditions added to the adverse effect of reduced farm income.

More exposed masonry construction, due to efforts in gaining of more support of architects, is reflected in a gain for concrete masonry in larger structures where appearance is a deciding factor in selection of construction materials. There also was reported evidence that the basement market is making a comeback in some areas.

Unstable prices and price wars were indicated as resulting from stiff competition by relatively few, as were cost increases and reduced profit margins. One producer in a western state is closing two sales offices and a distribution yard so that he might reduce overhead, and he will concentrate on the metropolitan market only. He expects

to realize a higher net return at reduced volume.

The industry continues highly competitive with 75 percent reporting that competitive conditions were more severe in 1955 than in 1954. Of those who commented on efforts to meet this competition, 57 percent have given more stress to increased sales effort. They are putting on more salesmen for personalized effort and doing far more newspaper, radio and direct mail advertising.

Thirty percent said their answer to competition was to provide better service and higher quality of product. Several who are located in extremely competitive areas are striving for complete distribution through dealers.

Cement shortages have had the effect of minimizing competitive situations for some, in areas where competition would otherwise have been severe. They have also had the effect of discouraging diversification and the seeking of enlarged markets. There were several reports that the N.C.M.A. promotion material is bringing excellent results and that local concrete masonry associations are effective in maintaining market stability.

There has been much attention given to diversification of products. Many producers are making entirely new products and also have added

(Continued on page 210)



Loading 8 ft. 1-in. dia. autoclave operated by Graystone, Inc., Seattle, Wash. The autoclave holds 30 racks, each with a capacity of 72 standard 8-in. block.

*You'll see it at the  
Chicago Show, Feb. 13-16*

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Shorter center of gravity • Reduced weight

3 speed transmission

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Complete choice of optional equipment

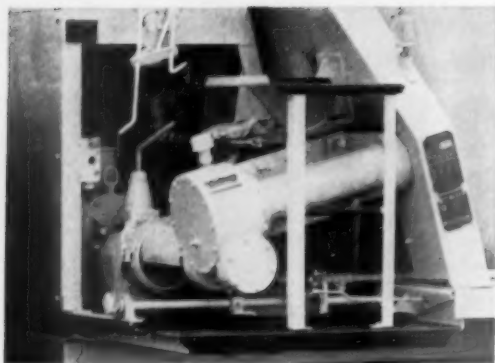
Now available in standard sizes 3½ yd.  
to 8½ yd., to fit your operation.

## THE JAEGER MACHINE COMPANY

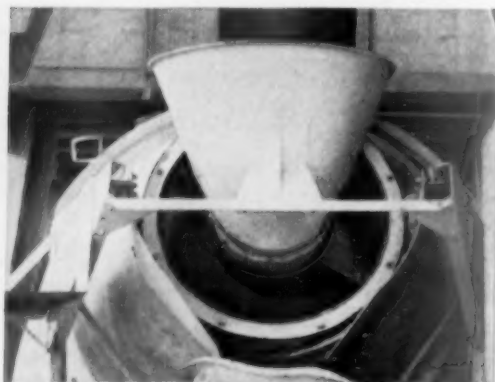
603 Dublin Avenue, Columbus 16, Ohio



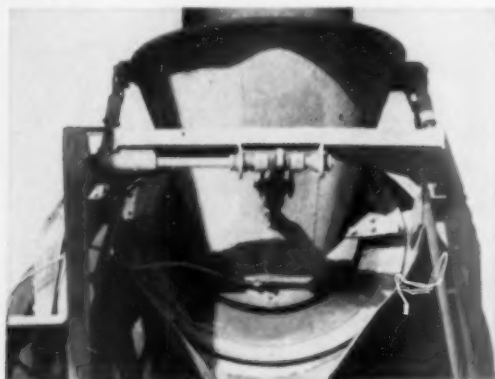
**THIS 3½ - 4 YD. WILL BE SHOWN AT CHICAGO.** Hauls 3 to 3½ yds. legal payload on single axle, 4 to 4½ yds. legal payload on lightest tandem axle trucks. Also available with sealed end loader, if desired. High speed water injection through drum head is available on all 1956 Jaegers. Optional choice of rear-end water injection is offered on all open-end loaders.



**3-SPEED SINGLE LEVER TRANSMISSION:** Up to 17 rpm @2000 rpm engine speed for fast charging; down to 2 rpm @1000 rpm engine for discharging to wheelbarrows. Meets every need at efficient engine speeds. "Single stick" operation with automatic brake. Choice of hydraulic reversing or automotive forward-reverse drive—both long proved.



**ENLARGED FAST-CHARGING OPEN END LOADER:** Bigger throat diameter, combined with new 17 rpm drum charging speed, takes fastest charge without blow-back. Jaeger's 25% bigger discharge blades (fastest discharge of any truck mixers) also facilitate faster charging and prevent spillage from full mixer drum-loads in transit.



**FAST-CHARGING SEALED END LOADER:** Famous Jaeger trouble-free sealed end loader with built-in lubrication system. Takes fast charge at 17 rpm drum speed; opens wide for unimpeded discharge with one quick turn of a handwheel. Optional on all standard models.





**SEE THIS NEW 6½ - 7 YD. "MIX-PLUS" MODEL AT THE NATIONAL SAND & GRAVEL—READY MIXED SHOW:**

Compare this 1956 Jaeger with other mixers you will see there. Compare its all-automatic welded drum, continuous spiral blades and exclusive "Throw-Back" blades for end-to-end "dual mixing". Compare its one-piece rolled

steel drum track, bigger diameter drum rollers and bigger diameter drum drive sprocket with drop forged, hardened alloy steel teeth and heavy duty 2" pitch offset sidebar chain—all features of Jaeger long life.

**NOTE:** *If you can't get to Chicago for the Show, ask your Jaeger distributor or write Jaeger for complete information.*



**Casting prestressed concrete poles in the yard of Mills & Jones, St. Petersburg, Fla.**

a wider range of sizes for normal construction. The breakdown is that 79 percent have added new products in 1955 or will do so in 1956, against only 21 percent who have made no additions.

Stress on improving the appearance of concrete masonry construction is indicated by the fact that 30 percent of the listed new items were colored concrete units and 25 percent were split rock face units. Thirteen percent comprise new sizes. Among the other items, in order of numbers of mentions, were long-span beams and slabs of pre-stressed concrete, lightweight concrete masonry units, joists, lintels, solid block, precast roof planks and channels, patio block, tile facing units, marble-faced block, pilaster units and septic tanks. There was a report that Thermoflector insulating block was added and, in another case, that glazed faced slag block are being made. One producer has added to his line of masonry supplies. Among new markets mentioned were retaining walls and sidewalks. Larger market areas geographically are being developed in some instances.

#### **Cement Shortage**

Apparently, the concrete masonry industry fared better in 1955 than the ready-mixed concrete industry in the availability of cement. Seventy-nine percent indicated that cement supply did not affect their volume of business to significant extent. Business losses of the remaining 29 percent, who reported shortages of varying extent, were not significant, as far as volume is concerned, because most of them purchased out-of-area or foreign cement as required to meet requirements. Higher prices were paid for such cement and some of it had to be absorbed.

Losses in volume of 1955 business

by those most seriously hit ranged from a few percent to 30 percent, with an average figure between 10 and 15 percent. With one or two exceptions, it was indicated that such losses were not permanent, meaning that the demand would carry over into 1956. A permanent loss of 75 percent of 1955 volume, reported by one producer, indicates that competitive operations with available cement took over the business.

In one instance, a producer reported no loss of business but that he was forced to ship green block because he had insufficient cement to stockpile block for shipment in periods of peak demand. A few, in northern areas, follow the practice of peak operation in the winter in order to build up large stockpiles when cement is more readily available.

Sixty-five percent expanded their operations in 1955, ranging from relatively minor changes to major plant building. The balance reported no change. Eighty-four percent of those who commented on future plant expansion and modernization indicated that they plan such investment in 1956 or 1957.

The concrete masonry industry is well on the way to more mechanization in the near future, both to improve efficiency and quality of product.

It is giving much more attention to material-handling aspects of the industry, in recognition that material-handling offers great potential in cost reduction.

More producers indicated that this phase of plant operation has been or will be in for revision than any other. These changes include more extensive use of lift trucks and other mechanized handling throughout, efficient cubing and, in many cases, mechanized unloading of units at the jobsite. New

plants scheduled for building will be designed to incorporate the utmost in mechanized material handling to eliminate hand work, as a feature of basic design.

New and improved curing facilities are on the agenda for many companies as they prepare for future operations. There were two or three new autoclave installations this past year and at least five new conversions are contemplated for the near future according to our letters. At least one company installed a combination of low- and high-pressure steam curing in 1955. There will be new installations of drying facilities in connection with low-pressure steam curing in order to reduce moisture content of units when delivered.

Enlarged facilities for under-roof storage are contemplated in 1956 plans by a number of producers, in order to permit year-round delivery. The practice also permits two-shift operation, the avoidance of overtime and may minimize expensive seasonal labor costs. One producer will increase his under-roof storage capacity by 1½ million units for these reasons.

As far as actual manufacturing plant facilities are concerned, added block machinery is being installed on an increasing scale and larger capacity block machines are being installed to replace older block machines.

Bulk cement bins continue to be installed where there were none before or for added capacity, and new batching equipment with automatic features and other improvements for control of proportioning. Several installations of Fuller-Kinyon pump systems have recently been made for cement handling and also for fly ash when used as an additive.

One company with a modern large autoclaving plant has installed an elaborate new batching arrangement. One man can now do the work of two and he has available lights and push-buttons for control of batching. Purpose of the installation is to prevent the operator from forgetting one or more of the many ingredients required for autoclaved products, and to improve uniformity and strength. It is of special interest that several companies have, or will have, their own testing laboratories in order better to control the quality of their product. They will also function to test additives and the properties of the various lightweight aggregates as they come available.

THE HELENA SAND AND GRAVEL Co., Helena, Mont., has been purchased by Carson Construction Co. The sale included the property, equipment and facilities at the 30-acre plant. George Jacoby is the former owner.

***Join the Swing to***  
**BUTLER**

## Ready Mixed Plant AUTOMATION

It's more than a swing . . . it's a rush! The Ready Mixed concrete business is greater than ever before and new peaks are ahead. Alert owners know that to keep pace with their markets they'll have to increase production and efficiency. Plant automation is the only solution.

But automation does much more. It greatly improves product quality. Automation prevents costly human error caused by operator fatigue. Automation provides

assurance that every batch will be the same until specifications change.

**And Plant automation wins buyer confidence, quickly pays for itself in increased sales.**

Incidentally, since 1955 all Federal specifications for any concrete construction involving over 5,000 yards require automatic, interlocked and recorded batching. That's on ALL future Federal work! So it's high time to think of BUTLER automation.



(Above) Completely automatic, electronic batcher operated by punched card. Note recorders.



(Above) BUTLER control panel for stationary mixer.



(Right) Another automatic BUTLER control panel.

**BUTLER BIN  
COMPANY**

**993 Blackstone Avenue  
Waukesha, Wisconsin**

**revolutionary new concept . . .**

**. . . a COMPLETE UNIT**

**before you consider any new mixer,  
think what these features  
will mean to your business**

**1 single frame construction**

No more costly "fighting" between mixer frame and truck frame.

**2 power from FRONT of truck engine**

The Smith "INTEGRAL" uses the truck engine. Power is taken off *ahead* of the truck clutch. Regardless of truck clutching or gear shifting, *the mixer continues to run*. This is a big advantage for stop-and-go driving, paving and curb and gutter jobs.

**3 standard trucks with manufacturer's warranty**

Take your choice of most standard trucks. The front power take-off and integral frame design are approved and warranted by the truck companies.

**4 1100 pounds less weight**

With no engine and no mixer frame, the Smith "INTEGRAL" cuts overall weight by 1100 pounds per unit. *Yet not one ounce of structural strength is sacrificed.*

**5 better weight distribution**

The Smith "INTEGRAL" is 7" shorter than comparable size Smith mixers with separate engine drive. Because the mixer is lighter and the center of gravity closer to the front, bigger legal payloads can be carried or shorter trucks can be used.

**6 much less maintenance cost**

You have only one engine to service — not two. Six cylinders instead of 12 to take care of. Experience has proven that there is little or no increase in maintenance on the truck engine and that costly maintenance of the mixer engine is completely eliminated.

**7 much less fuel consumption**

Careful records kept by operators for a year of job tests prove that *the Smith "INTEGRAL" can save more than \$40 per month on gas and oil alone*, compared to fuel costs on separate engine drives.

**8 much more stability**

There is no mounting strip on the Smith "INTEGRAL". The mixer is tied directly to and set lower in the truck frame. Valuable inches of headroom are saved and there is much less chance of tip-over.

The T. L. Smith Company presents the revolutionary new "INTEGRAL" with a great deal of pride. First to conceive and build a truck mixer unit which *uses the truck frame as the mixer frame and takes the power from the front of the truck engine crankshaft*, Smith engineers consider the "INTEGRAL" their finest contribution to the industry in more than 55 years of "firsts."



**int**

**ONE FRAME FOR BOTH TRUCK**

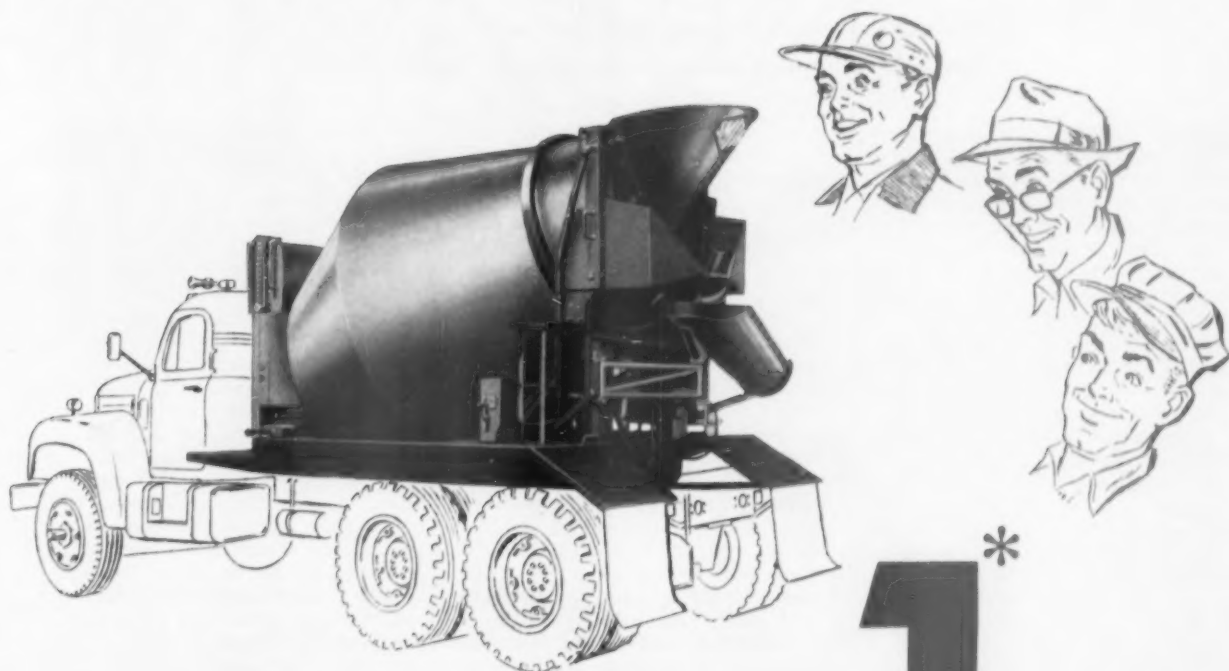
**the "INTEGRAL" is all new . . .  
yet thoroughly job-tested**

This great new Smith "INTEGRAL" mixer offers you a combination designed by Smith exclusively for the ready-mix industry. The "INTEGRAL" becomes a component part of your truck, making *one* solid, dependable, long-lasting unit.

But new as it is, the Smith "INTEGRAL" was not



**designed for the ready-mix industry**



# Integral

**AND MIXER** **ONE ENGINE FOR BOTH**

readied for you until it was tested, refined, and perfected. 88 units have been produced to test the front engine principles and design. 101 integrally mounted Smiths are working in the field today. All of these mixers have been job-tested in various sections of the country for as much as two years, to prove conclusively that this is the finest truck mixer ever developed for the ready-mix industry.

**Here, for the first time, is a composite of a mixer and standard truck which is designed specifically for the ready-mix industry.**

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CONCRETE PRODUCTS, January, 1956  
A Section of ROCK PRODUCTS

# Ready-Mixed Concrete Industry

## Now Requires 100 Million Barrels of Cement

• Rapid growth of industry continues, but business conditions are becoming increasingly competitive price-wise

**R**EADY-MIXED CONCRETE continues to set the pace in industry growth, in volume of business gain, plant expansion and new plant construction. Our estimate is that the ready-mixed concrete industry has now surpassed the 100 million bbl. of cement mark as its annual requirement. This is roughly one-third the entire production of portland cement. A production of 92 million cu. yd. in 1956 is indicated from industry reports and information available from other sources.

Throughout the past several years, the number of new companies coming into production has been astounding, in view of all the reports and claims of cement shortages. Only in the last few months has there been a slowdown in the influx of new operations, as indicated by our sources of news.

A year-end summary of reports on business conditions showed that 75 percent of the producers had higher volume of business in 1955 than in 1954. These increases ranged mostly between 10 and 20 percent. Exceptions were companies that doubled or trebled their volume of business. Seven percent had the same volume of sales for both years. Heavy influx of new competitive plants, depressed farm in-

come, drought and cement shortages were given as the reasons for the 18 percent who reported reduced volume in 1955.

Price increases of from one or two percent to ten percent became effective in 1955 for about one-half the producers. The other half sold concrete at 1954 prices. None indicated price decreases. The industry believes it is in need of price rises because of constantly increasing operating costs. Profits have suffered and, particularly, for producers who purchased foreign and out-of-area cements in order to meet demands. A large midwestern producer purchased 80,000 bbl. of such cements, on some of which a premium of over \$3.00 was paid. There were reports of 6-8 percent decreases in profit even for companies with greatly increased sales volume.

Volume of business was depressed due to cement shortages for a number of producers.

Sixty percent of producers predicted that their 1956 volume would exceed that for 1955, 38 percent expect equal volume and only 2 percent believe that 1956 volume will be less than in 1955.

The extent of plant and delivery

fleet expansion by the industry during the last two years has been amazing. Fully 90 percent reported expansion of facilities and the amount of average increase has been substantial. Forty-two percent have doubled, tripled or quadrupled capacity and most of the remainder have expanded capacity in the range of 25-60 percent. Still others have expanded each year for five years or more without interruption.

Aside from new batching facilities, which in many cases incorporate better controls for accuracy and quality, the investment has been substantial in delivery equipment. Much of the capacity increase has resulted from increasing the number of delivery units and through replacement of truck mixers with new ones of greater capacity.

Fifty percent have indicated that capacity will be further enlarged in 1956.

Competition continues strong in the industry as evidenced by the fact that slightly more than 50 percent of producers have had new competitors enter their marketing areas. On the other hand, there were several instances where the competition was such that a producer has failed or moved his plant out of the area. Also, some of the larger producers apparently are moving farther afield into other market areas where they are meeting the prices of local firms and gaining business through providing better service.

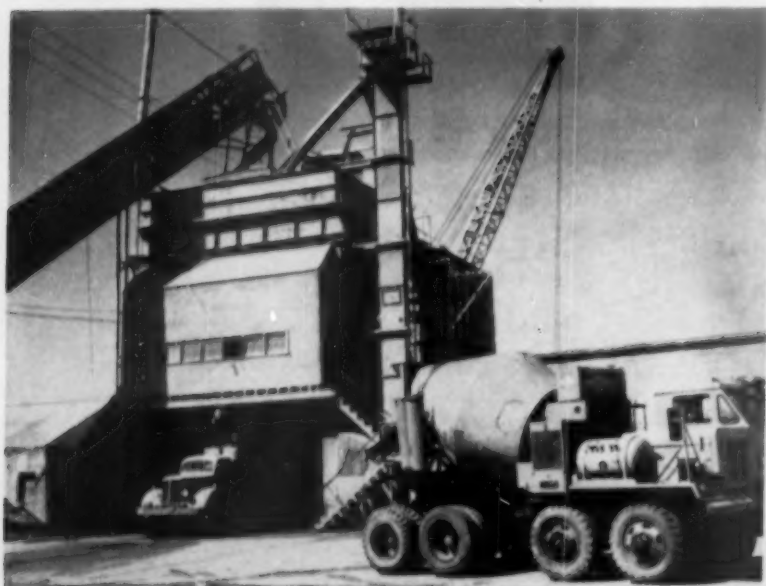
Fifty-five percent of our correspondents had serious cement shortages in 1955. Losses in volume ranged from a few percent up to many thousands of cubic yards. Most such losses seemed to be in the 10 to 25 percent range.

Of the 45 percent who reported no considerable loss, about two thirds had minor shortages for a few days or a week's duration, or they indicated a tight situation.

About one-third believe that business lost because of cement shortages would result in some permanent loss. Most believe permanent loss would be from 2-8 percent but one producer estimates a 75 percent permanent loss of business in 1955. Many would not hazard an estimate.

A few producers depended upon imported cement for their entire 1955

(Continued on page 216)



One of the new 7½-cu. yd. mixer trucks recently placed in service by Walt Keeler Co.

**JUST  
RIGHT FOR  
AUTOCLAVES**

this new *Erickson* is  
**AR-TIC-U-LATED**

MODEL P-7A  
MODEL P-10A

7,000 lbs.  
10,000 lbs.



*it turns in the middle—  
takes the corners like a breeze*

Erickson has created a revolutionary new idea in platform trucks—it's ARTICULATED—with a joint or pivot between platform and drive wheels. Models P-7A and P-10A are the units for the new and unusual operations, —autoclaves, for instance—where you need utmost maneuverability with heavy duty capacity. With the ARTICULATED design, platform bed can be made up to 10 or 12 feet and still handle heavy, bulky loads with ease. These articulated models are in addition to the veteran Erickson P-5 and P-7 standard models, and built with the same rugged durability.

Erickson Fork Trucks are made in 10 sizes from 2,000 to 20,000 lb. capacity. Send for circular on the complete Erickson line.

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MODEL P-5,  
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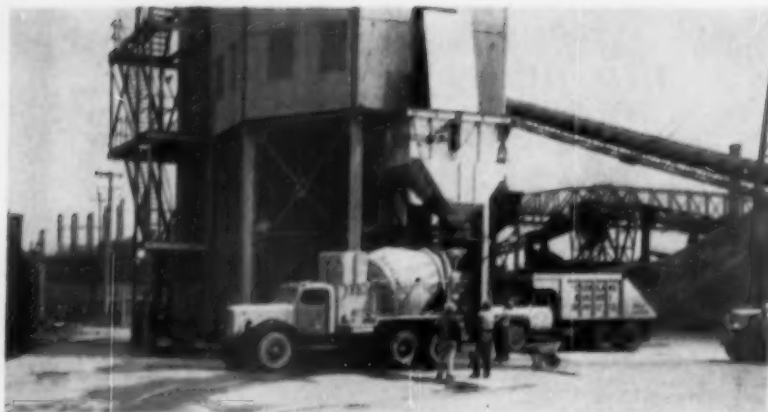
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Automatic batching plant of Cleveland Builder's Supply Co.

requirements; while others supplemented their normal sources with imported and out-of-area cements. Premium costs as a result were absorbed by a good number.

Forty-eight percent indicated that they supplied ready-mixed concrete for paving in 1955 or are scheduled to do so in 1956. One has gone into contracting for paving because of attempts by contractors to whittle down the price of ready-mixed concrete. Several are entering the precast and prestressed concrete business as part of a program of diversification; and a few are starting to supply special services like providing steel forms for basements.

New restrictive zoning laws comprise one of the principal handicaps for an industry that must necessarily be located in or near centers of population. Complaints about dust, overloading, noise, traffic and unsightliness are in the fore-front of complaints about the industry's operations. About 20 percent have had one or more such complaints this past year.

Villages have made it virtually im-

possible to establish a ready-mixed concrete plant in many instances. One very large producer in a large Michigan city solved the problem by building a large, new main plant at an entirely new location in the same city.

Many producers are re-routing their delivery units wherever they can in order to minimize complaints about traffic, noise and dust. Far-sighted producers adjacent to residential areas are giving their operations a face-lifting by planting trees, shrubs, lawns and vines around property fences in order to lend a desirable atmosphere to their operations.

The ready-mixed concrete industry has an average investment per employee, including current assets or working capital, of \$14,480 which comfortably exceeds the average investment for all industry. Forty percent have an investment between \$10,000 and \$15,000 and 33 percent are between \$16,000 and 20,000. Seven percent have an investment from \$21,000 to \$30,000 and the remaining 20 percent fall below \$10,000.



Ready-mixed concrete plant No. 2 of Anderson-Dunham, Inc., Baton Rouge, La.

This figure is significant when it is realized that there are about 3135 plants. Taking the average figure of 16 employees per plant including drivers, there are 50,160 employees in the industry. The indicated figure is thus \$727,000,000 which is about three-fourths the annual volume of sales.

Expenditures for machinery, supplies and payrolls also present an imposing figure. Forty-two percent have annual expenditures between \$100,000 and \$500,000 annually, 29 percent less than \$100,000, 16 percent in excess of \$1 million and 12 percent between \$500,000 and \$1 million. The average overall is \$454,200 which is undoubtedly high since some of the producers are also engaged in other production.

### Concrete Masonry Promotion

NATIONAL CONCRETE MASONRY ASSOCIATION has prepared promotion materials on the concrete masonry house that withstood the recent atomic explosion at Yucca Flats, Nev. The material, designed to show the strength and durability of concrete masonry, includes: "Design for Survival," an eight-page, two-color booklet describing the concrete masonry home that withstood the blast; "Construction Detail Sheet," giving more technical construction information on the same house; and a set of six mats for newspaper advertising. The set of mats includes three two-column and three one-column ads, giving strong emphasis to concrete masonry in the bold headline and in the copy.

### Ohio Concrete Short Course

THE OHIO READY MIXED CONCRETE ASSOCIATION has announced its next Short Course will be held at the University of Akron, Akron, Ohio, January 16 through 18, 1956. Topics for discussion will include practical talks and demonstrations on the "Why, What, and How of Producing Quality Concrete." The three-day course will conclude January 18th, with a discussion on operating problems, assisted by a panel, and opportunity for questions and answers and audience participation. Hotel headquarters will be at the Sheraton-Mayflower, Akron, Ohio.

### Increase Production

WELK PRE-CAST CONCRETE STEP Co., Seattle, Wash., has increased its precast, reinforced concrete step production to a double-shift operation. The stepped-up operations resulted from a 400 percent increase in business during the past 15 months. Martin G. Welk is president of the company, which also has a plant in Spokane, Wash., and sales offices in Moses Lake and Richland, Wash.





**WOW!**  
*it's a beauty!*



**MAN!**  
*what a capacity!*



Challenge, sales and quality leader five straight  
years, now presents to the  
Ready Mixed Concrete Industry a new  
truck mixer that assures even greater profits.

See it at the NRMCA Convention February 13-16,  
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*Pacemaker*  
**TRUCK MIXERS**

# TECHNICAL Problems and Research Emphasized At Southeastern Meeting

• Southeastern Concrete Masonry Association meets with Texas association to discuss business conditions, curing, lightweight aggregates and promotion program

CONCRETE BLOCK MANUFACTURERS meeting in Houston, Texas, Nov. 21 to 23, heard predictions that 1956 may be the biggest construction year on record but a period likely to bring increased labor costs. At the same time they were warned to beware of a profitless prosperity. The occasion was the twelfth annual regional meeting of the Southeastern Concrete Masonry Association. This year the gathering was held in cooperation with the Texas Concrete Masonry Association. Registrations were 275.

Although analyses of economic trends occupied considerable time on the three-day program, a great deal of attention was given to reports and discussions of the use of pozzolans, progress in high pressure steam curing and developments in the use of lightweight aggregates. All the business sessions were held at the Shamrock Hotel in Houston.

George W. Katterjohn, of Paducah, Ky., president of the Southeastern Association, opened the sessions on November 21 by calling on William F. Smith of Black-Brolier, Inc., to introduce Dr. William V. Houston, president of Rice Institute, who delivered an address of welcome on behalf of the city of Houston.

James C. Fountain, 1955 president of the Texas Concrete Masonry Association, delivered an address of welcome on behalf of the block industry in Texas. He told the visiting manufacturers that the rapid strides in the making of concrete masonry units since the development of the first lightweight aggregate in the state have made the Texas Association the fastest growing body in the concrete masonry industry. He predicted that 10 to 12 new autoclave plants will be operating in Texas in the next six months.

## Business Trends

At the request of Chairman Katterjohn block men from various areas gave brief reports on current and future business conditions in their sections. These were as follows:

ALBANY, GA., J. G. Marbury, Albany Concrete Products Co. reported:

"Block business is 75 per cent of good. Looks better for next year."

PHOENIX, ARIZ., Glenn C. Barnes, Concrete Industries, Inc.: "Market holding up very well."

AMARILLO, TEXAS, Charles T. Crowe, Crowe Gulde Cement Co.: "Block business is pretty good and is going to be better."

WACO, TEXAS, Vernon Cole, Texas Concrete Works: "Block business has been off a little but looks better."

NEW ORLEANS, LA., Phil J. Lala, Conblox, Inc.: "Block business is pretty good, there is lots of home business."

BUFFALO, N. Y., Fred W. Reinhold, Anchor Concrete Products, Inc.: "Nationally about a 4 percent increase in concrete masonry business over last year is expected. We may have a 500 million dollar market."

LEXINGTON, KY., R. C. Page, Page-Groves Co.: "Model home show attracted wide attention. Looks like more business ahead. Lightweight block business has decreased some."

SALT LAKE CITY, UTAH, Otto Buchner, Buehner Block Co.: "Overall picture indicates masonry industry should have 40 percent of the housing market. I believe an increase will be shown this year. Our own plant has an increase of about 20 percent. We expect a 10 percent increase in 1956. I believe the school building program will hit a peak about 1956. The next few years should bring tremendous growth."

JACKSON, MISS., Dale Cobb, Jackson Ready-Mix Concrete: "We are finding a better market in our area. Additional applications for concrete masonry units are developing increased business. Colored split block are attracting home business."

LAKELAND, FLA., C. W. Zimmerman, Cement Products & Supply Co.: "Our biggest market is for houses. This has slowed down a little because of FHA changes in heat loss requirements."

## Threat to Private Economy

Ed C. Burris, executive vice president of the Texas Manufacturers As-

sociation, Houston, spoke on "Economic Trends in the South."

Mr. Burris declared that "the creeping shadow of taxation threatens private economy and we must call a halt to this." He described the "unprecedented growth in industry in the South, the rate of which has not been matched in any other area in such a brief period of time in the annals of history." He said that expansion in the aircraft, paper and pulp, transportation equipment, petroleum, and basic metallic industries were chiefly responsible for this growth. At the same time and in the face of a rapid increase in population, he showed that the number of farms in the South had decreased by nearly half a million. On this point Mr. Burris said:

"This shift from the farm to the city," Mr. Burris said, "has brought about a great shortage in housing and in municipal facilities, thus forcing a great building program, and there is every indication that this will continue."

The speaker quoted statistics showing that on Jan. 1, 1955 there was a backlog of contemplated industrial construction in the Southern states for a total of \$5,474,000,000 which he said equals nearly 50 percent of the nation's planned industrial construction. He quoted additional figures to the effect that the backlog of total construction for the South at the same period was \$24,064,000,000, or approximately a third of the total construction scheduled for the entire nation."

## Atomic Blast Movie

Motion picture footage and still pictures of the atomic bomb tests at Yucca Flats, May 5, 1955 were shown by Cedric Willson, vice-president in charge of engineering for Texas Industries, Inc. The pictures illustrated Mr. Willson's talk entitled "Operation Cue," which was a report on the performance of concrete masonry structures under nuclear blast exposure. Mr. Willson was a consultant in the construction of the test dwellings and other structures. Some of the pictures



Rugged Y-260 speeds yard operations at Sherman Concrete Pipe Co., Knoxville, Tenn.

## Sherman Concrete Pipe knows . . . **BIG LOADS MEAN BIG PROFITS**

Concrete pipe with diameters of 7 feet, and weighing 20,000 lbs. is a big load . . . calls for big, rugged equipment. Sherman Concrete found the Clark-Ross Y-260 met the test—released 8 to 10 men for more productive work, speeded operations, increased their profits.

Rugged terrain, mud, bad weather are no problem for the Clark-Ross Y-260. Balanced weight distribution and large sized tires guarantee positive traction. Low center of gravity combined with a high under-clearance of 10" gives exceptional oper-

ation on rough terrain. And for maneuverability the Y-260 can't be beat. The shaped rear counterweight of the Y-260 is especially designed to reduce overhang in turning, to give a minimum of tail swing.

Here's a truck that offers outstanding traction and maneuverability . . . with big load capacity. Call your local Clark dealer for details on how the Y-260 can increase profits in your operations. He's listed in the Yellow Pages under, "Trucks, Industrial."

**CLARK**  
**EQUIPMENT**

Industrial Truck Division **CLARK EQUIPMENT COMPANY** Battle Creek 60, Mich.

had never before been shown publicly. He explained that five concrete masonry producers "carried the ball" for the industry in defraying the heavy expense involved in the test construction.

Mr. Willson first showed still pictures of the various buildings tested before the blast and then ran film from some of the 28 official automatic government cameras which were focused on the blast site. To afford a comparison, he then ran colored still pictures from the same position as the first pictures shown.

"It is obvious that reinforced concrete masonry construction will resist nuclear blasts," Mr. Willson said.

#### N.C.M.A. Research Plans

Speaking on "The National Concrete Masonry Association's Plans for Engineering and Technical Research," R. E. Copeland, director of engineering of N.C.M.A., suggested that block manufacturers themselves have not fully realized the size of the concrete masonry industry. He referred to a recent list of the largest construction projects compiled by the American Society of Civil Engineers, including large dams using as much as 17,750,000 cu. yd. of concrete. "Our industry," he said, "uses approximately 20,000,000 cu. yd. of concrete annually, has an investment of 400 million dollars in plants and equipment and does an annual volume of business of about that amount. It behooves us to have a plan to insure that our business will remain good."

Mr. Copeland referred to the work of a Sub-Committee on Plan appointed by the N.C.M.A. Technical Committee. This Sub-Committee's report, he said, points out that where the average American industry spends 2½ percent of its sales for research, the block industry is spending 5/100 of one percent for this purpose.

"Many industries are trying to take our business away from us," the speaker said. "We are in a pretty tough race." He pointed out that the structural clay tile industry has recently built a laboratory employing 20 people and are planning to expand their research activities to require ten more research engineers. In addition he said, the clay tile people have an engineering and technology staff in Washington, D. C. and have various regional offices. Mr. Copeland also referred to the fact that the concrete masonry industry faces vigorous, well-financed competition from lumber, glass and various metals.

The speaker said the N.C.M.A. Sub-Committee members felt that a long-range plan including a great many more activities than have been possible



George W. Katterjohn, president of South-eastern Concrete Masonry Association

in the past, should be presented to the members. The proposed plan as visualized by the Committee, he said, would be soundly conceived, with definite objectives, adequately financed and conducted by competent people. Among the objectives, he said, would be improving quality, reducing manufacturing costs, providing more technical information on cracking and compilation and publication of more technical data. He said plans also included a series of regional and local meetings to discuss technical phases of concrete masonry construction and design; holding schools for plant employees; more meetings with architects and engineers; more frequent plant visits; provision for visiting jobs; more attention to possible means of reducing costs; closer contacts with building officials and more help to new product developments. And in printed matter, he said, the plan included preparation of a technical manual for members, preparation of class room material and apprentice and vocational training courses.

Research for the first five years, the speaker said, is to be concentrated on how to reduce cracking. It is realized that the solution must be practical and low in cost. The field engineering program is to be in charge of three additional engineers. It is sought to stimulate some means of better manufacturing controls. At the end of five years it is contemplated that all these activities will be expanded. Then there will be a staff of 20 conducting research of whom 13 will be in the general office and seven at the proposed research laboratory. At the end of five years the contemplated costs will be \$237,000 annually. It will drop to \$217,000 on the sixth year. The \$133,000 required for building the laboratory is to be set aside in a sinking fund.

"At its maximum," Mr. Copeland said, "the research program will cost

no more than 23.7 cents per 1,000 block, assuming that N.C.M.A. members produce a billion block annually. This is a business expense which can properly be passed on to the consumer especially since it is designed to give the consumer a better product."

Mr. Copeland said that 97 percent of the N.C.M.A. members who answered questionnaires on the proposed plan, said "Yes" to the proposal to do more research work. Of these 91 percent were in favor of proceeding at once. The board of directors has approved the plan and Mr. Copeland said it is now up to the membership as to whether the proposed five-year plan can be carried out.

The speaker showed brochures on technical subjects issued by N.C.M.A. during the year 1955, including the following: "Accelerated Drying of Concrete Masonry Units," "Effect of Curing on Properties Affecting Shrinkage Cracking of Concrete Block," "Sound-Reducing Properties of Concrete Masonry Walls," and "Investigation of Structural Properties of Reinforced Concrete Masonry."

Wolf G. Bauer, Seattle, Wash., a consulting process engineer, delivered a technical paper on "The Effect of Pozzolanic Materials in Concrete Masonry." Mr. Bauer, formerly with Atlas Building Products Co., El Paso, Texas, said that he still serves that company as a consultant.

#### Symposium on Curing

A symposium on "Curing Concrete Masonry Units" was the closing feature of the second day's business session. Rudolph C. Valore, Jr. of Texas Industries, Dallas, opened the symposium with a discussion on "Principles of Autoclave Curing." Mr. Valore was formerly with the National Bureau of Standards in Washington, D. C. Cedric Willson, vice-president of Texas Industries, Inc., was moderator.

In addition to Mr. Valore, members of the symposium panel were: James Schwartz, National Brick & Supply Co., Washington, D. C., who spoke on "One-Phase High Pressure Curing," Leonard Jones of Chandler Materials Co., Tulsa, Okla., who spoke on "Two-Phase High Pressure Steam Curing," and Henry Toennies of the N.C.M.A. engineering staff whose paper was on "Low Pressure Steam Curing."

The keen interest in high pressure steam curing was evidenced by the lively discussion from the floor which followed the various formal presentations.

Mr. Valore said in part: "The process of manufacturing sand-lime brick by curing for 5 to 10 hr. in an atmos-

(Continued on page 233)



Go South..

MR. BLOCK-MAKER,

..Go South



## New Orleans BECKONS YOU!

NCMA Convention to be held at Roosevelt Hotel . . . January 23, 24, 25, 1956

Three days of delightful relaxation and fun await you at New Orleans . . . storied city of romance and adventure. Of course, you want to find out what's new in automatic machinery for making high quality block, and to learn of new processes and production methods. But, in addition to the interesting program scheduled for the NCMA Convention, a host of attractions will make your visit memorable. Home of the Mardi Gras, New Orleans knows how to entertain . . . with its famed "French Quarter" and world-famed restaurants, exciting mid-winter amusements and sports. Sightseeing in this historic city is an event in itself. In fact, life in New Orleans is like its coffee and food . . . richly exotic, spiced with a fascinating blend of the old world and the new. Days, and especially evenings, are mild and balmy, with a warm Gulf breeze and restful temperatures, making every moment of your visit really enjoyable. Come to the convention this year! You'll have the time of your life!



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You are cordially invited to meet at the Besser Headquarters. Here you can talk and visit with successful Vibrapac block makers. Besser Sales, Service and Engineering Personnel will be on hand to discuss new ideas, new products, and Automation in the block plant. Ask for information on Besser Cooperative Advertising, planned and prepared by Besser to help you sell block. So come in and see us. A friendly welcome awaits you.

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# BESSER COMPANY

World's Leading Manufacturer of Concrete Block Machinery

ALPENA, MICHIGAN, U.S.A.



Mack B-60T with trailer hauling Marietta precast concrete panels (approx. 3,200 lbs. each) to construction site.

## *Marietta* relies on **MACKS** to deliver big precast concrete panels on schedule

When a contractor is ready to erect precast concrete siding, deliveries must be made promptly on schedule.

That's why the Marietta Concrete Corporation of Marietta, Ohio, chose Macks. They were convinced that these rugged, dependable tractors would maintain a steady flow of their unique concrete-and-insulation "sandwiches" from production line to building sites.

Marietta uses Mack B-60T's with special trailers to transport these big precast concrete insulated wall panels, which measure up to 8' x 20', and weigh 3,200 lbs. and more. Although many deliveries are

made as far away as 200 miles over all types of roads, Macks' dependable and versatile performance keeps these big slabs rolling on schedule.

Whenever maintaining tight schedules is of the utmost importance, you can depend on Macks' stamina and roadability for round-the-clock reliability. And you can count on Mack Thermodyne® Diesels for unmatched fuel economy. It will certainly pay you to find out how Mack can help you make more money on the *important* jobs . . . the *Mack-sized* jobs. Contact your Mack Branch or Distributor today.

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3604

phere of saturated steam at temperatures of 350 to 365 deg. F., (120 to 150 p.s.i. steam pressure), has been known since 1880. This process results in chemical and physical reactions between the lime (CaO) and silica (SiO<sub>2</sub>) in the presence of water to form high-strength crystalline compounds which are relatively stable, dimensionally, to changes in moisture content.

"Portland cement is 'unbalanced' chemically when used as the sole cementitious material in autoclaved products since it consists of about 60 percent lime and 20 percent silica. Supplementary silica must be added so that the total weight of silica equals or exceeds that of lime in order to produce the highest strengths. This permits a marked reduction in cement content and is one of the important economic factors in high-pressure steam curing. Other factors are virtually complete strength development in a few hours and low moisture content immediately after curing, permitting immediate shipment and reduced storage area.

"Although most plants measure pressure instead of temperature, it is the high temperature that provides the necessary curing condition. High pressure is merely the necessary evil to provide the properly moist atmosphere at the required high temperature. Temperatures should be determined, not only after the pressure cycle begins, but earlier, as the temperature is raised to 212 deg. F. In the absence of evidence to the contrary, the rise in temperature should be uniform from holding or pre-steaming temperature to curing temperature, and should require no less than 3 hr. Blow-down may be rapid if physical properties of block are not adversely affected. Gradual cooling may improve strength but leave block with an unsatisfactory, high moisture content.

"Processes now used in high-pressure curing of block are one-phase and two-phase curing, defined as follows:

**"ONE-PHASE** — Block remains on pallets in racks during entire curing operation.

**"TWO-PHASE**—Block are pre-cured on pallets in racks to develop sufficient strength for handling, are then cubed, and the cubes are finally cured in autoclaves.

"The one-phase process permits a wide choice in the use of binder materials: portland cement, lime, or blends of cement and lime may be used, and rather high proportions of siliceous material may be used. Cement contents may be reduced by 40 to 60 percent.

"The two-phase process has a not-



Earl Peterson, newly elected president of N.C.M.A.

able advantage. By autoclaving in cubes, the capacity of each autoclave is, in effect, doubled. The need for early handling strength to avoid breakage in cubing, however, virtually limits the choice of binder to portland cement. The percentage of siliceous material that may be used to replace cement appears to be far smaller than the 40 to 60 percent replacement permissible in the one-phase system. Consequently, ultimate strength may be limited."

#### One-Phase Curing

James Schwartz, second speaker on the symposium, described the one-phase high pressure steam curing system used in the National Brick Co. plant in Washington, D. C., where he said 30,000 block per day were being made with two block machines. In their experience, he said, 8 lb. of steam is required to cure one block.

Aggregates used include anthracite cinders, limestone screenings and bank sand with Type I portland cement and silica flour at 200 mesh fineness.

"In the curing cycle," Mr. Schwartz explained, "we use racks of 72-block capacity requiring one hour to load one autoclave and 2½ to 3 hr. to bring to 150 lb. We leave the block at 150 lb. for 5 hr., then blow-down to atmospheric pressure and hold for 45-min. Unloading requires 45 min. The moisture content of the block is 22 to 26 percent at blow-down." This process, Mr. Schwartz says, eliminates hair cracks in the block.

Two lift trucks are used to move block from kilns to cubing area. Three lift trucks are used for the whole operation. The trucks which convey the block into the autoclaves have solid rubber tires which ride on a shelf rail in the autoclave.

Tests with cinder aggregate show very low shrinkage. Mr. Schwartz emphasizes the fact that the block are fully cured before being handled. He pointed to a saving through the use of silica flour. "Our saving is 8/10¢ per block," he said.

#### Two-Phase Curing

Leonard Jones described two-phase high pressure steam curing as conducted in the Chandler Materials Co. plant at Tulsa, Okla. The plant operates two autoclaves, 8 ft. 6-in. in diameter by 120-ft. long. They are insulated with 2½-in. thick rockwool blankets and are built on I-beam runners. A gas-fired 300 hp. boiler furnishes 600,000 lb. of steam per hour.

Autoclave capacity is 7,200, 8 x 8 x 16-in. equivalents on a train of 15 flat cars. In the first phase of curing the block are left on racks and are moist cured in steam at atmospheric pressure for 7 hr. by which time they are strong enough to handle. They are then cubed on flat-bed cars and placed in the autoclave at 150 lb. pressure and 366 deg. F. temperature, where they remain for 7 hr. After a 10-min. blow-down the block are ready to be removed for storage or loaded for delivery.

Mr. Jones believes that by this two-phase high pressure steam curing method he can process a larger number of units per dollar of investment than by any other method. He said his curing costs are well under one cent per block.

#### Low Pressure Steam Curing

Henry Toennies, of the N.C.M.A. engineering staff, called attention to the fact that low pressure steam curing embodies nothing which has not been known for many years. He said it should be remembered that optimum time and temperature for low pressure steam curing is not the same for all types of block. Mr. Toennies quoted parts of N.C.M.A.'s low pressure steam curing specifications and declared that plants should determine the temperatures best suited to their particular needs. The speaker asserted that high quality concrete block can be produced by low pressure steam curing if the block are properly dried after steaming.

Otto Buehner of Buehner Block Co., Salt Lake City, presided at the closing session. The first speaker, Walter D. Kelsey of the Houston Association of Credit Men spoke on "Credit, the Atomic Element in Business."

#### Housing One of Biggest Markets

S. H. Westby, manager of the housing and cement products bureau of

(Continued on page 229)



# TRUCK MAINTENANCE

By JAS. A. NICHOLSON\*

## 37. A producer views the ready-mixed concrete business. This is the second of two articles on mixer truck maintenance

ALL GOOD SIZED MANUFACTURERS OF TRUCKS have prepared model preventive maintenance programs that any producer can adopt for use in caring for his own fleet of trucks. My first suggestion is that you go to the truck distributor handling the largest share of your business and work out with him a suggested preventive maintenance program. In working out a planned schedule, take into consideration idling time, tough off-the-road pulling, dusty plant conditions, and other special hazards that trucks in your operation must face. Age and operating condition of equipment are other important determinants.

A second suggestion calls for making the months of December through March (or other slow month periods) the periods of major repairs and overhauls. At our Toledo operations, any first year equipment needing extensive repairs is given attention in December. Major repairs and overhauls are made on two-year old equipment in January. Similar attention is given in February to three-year old trucks. Units four years or older are overhauled in March, the month that the truck license year ends in Ohio. Whenever possible, decision whether to overhaul or replace older trucks is made earlier, but action is deferred until March so that these units may be used while other trucks are garaged for repairs and overhauls.

On the subject of major repairs and overhauls, it should be pointed out that this work is always best done by a properly equipped, fully responsible garage that is manned by experienced competent personnel. Unless a producer has a sufficient fleet to justify such a maintenance operation, overhauls and major repairs should be jobbed out. This is the time to think of repair parts kits that are now available for a long list of repairs. The replacement of a single part that will work in close relation with partially worn parts is a foolish, wasteful practice.

Our next suggestion calls for the lumping together of a number of lubricating activities, given the listing of Series L. This lubrication work is done each and every time that a truck is brought in for regular servicing. Other lubrication work that requires less frequent attention is listed under one

of several other periodic checking, tightening, testing, and repairing schedules that might be worked out with the truck distributor or oil company engineer.

Largely in the past, we have been following a Truck and Bus Preventive Maintenance worksheet issued by one of the leading oil companies. All large oil companies and truck manufacturers have similar worksheets that are readily available. On the whole, these sheets are quite comparable, varying only on certain items as to the required frequency of service. Whatever plan you follow—your own or another's—services performed should be based on the requirements of your own operation.

You might work out several series of services; say, A, B, and C. Whenever A, B, or C services are to be performed, lubrication work under Series L is always carried out. In series L, services always include a complete chassis lubrication, checking of all lubricant levels, possible change of engine oil and filter cartridge, servicing of air cleaner and tightening of wheel lugs.

Series A includes a number of services that should be performed every 15 to 18 operating days, every 1200 to 2000 miles, or every so many hours of operation. In series B, these same services are again performed and approximately ten less frequently required services are added.

A typical A series would include the following—inspection adjustment and correction of:—(1) Clutch and brake action; (2) horn and starter; (3) wipers, lights, mirrors, and signaling devices; (4) cooling system, rust and leaks; (5) engine operation; (6) leaks—engine, differential, and transmission; (7) battery and cables; (8) instruments, generator, and governor; (9) tires, wheels, and frame; and (10) tie rods, springs, shackles, and steering.

In a typical B series, the A services would be repeated, the water pump and universal joints would be lubricated, the motor tuned up and the following would be added: Inspection, adjustment, and correction of (11) mainshaft and pinion shaft; (12) driveline and midship bearing; (13) king pins and bushings; (14) springs and frame U bolts; (15) plugs, break-

er points, coil, and condenser; (16) tappets, fuel pumps, and carburetors.

In a typical C series, A and B services would be repeated, with the following added: Inspection, adjustment, and correction of (17) crank case ventilator; (18) valve clearance; (19) cylinder compression; (20) starter switch, coil, ammeter, and distributor connections; (21) starting motor, generator, and voltage control unit; (22) motor mounting bolts; (23) caster, camber, and toe-in; and (24) water temperature (replace thermostat if necessary.)

Other service operations, generally required to be performed less frequently than any of the above services, could be included in a Series D or could be planned at a given mileage period or several times a year. These services would include (25) clean and repack wheel bearings; (26) replace spark plugs, distributor points, and condenser; (27) replace or recondition magneto, impulse starter, fuel pump, and carburetor; (28) clean oil pan, pumpscreen and crankcase and inspect oil pump assembly and lines; (29) inspect and clean transmission and differential cases; and (30) flush cooling system.

The above series of services should not be considered all inclusive. Each producer should attempt to fit a preventive maintenance program to his own operational problems, taking into consideration age and operating condition of equipment. As older trucks are exposed to wear and tear, more C and D servicing will be necessary.

Labor hours required for each of these services will, of course, be dependent upon efficiency of garage personnel and adequacy of maintenance facilities. It is estimated for comparison only that L will take 1½ hr.; A, 3 hr.; B, 5 hr.; C, 8 hr.; and D, 16 hr. Every two weeks, every 15 to 18 operating days, or every 1200-2000 miles, each truck should be given one of these services, combined always with work listed under Series L. Remember this—an annual series of services that will keep a comparatively new truck in good operating condition will not be sufficient for an older truck. Increased operating life requires additional care.

(Continued on page 226)

\*Pres., Nicholson Concrete Co., Toledo, Ohio.



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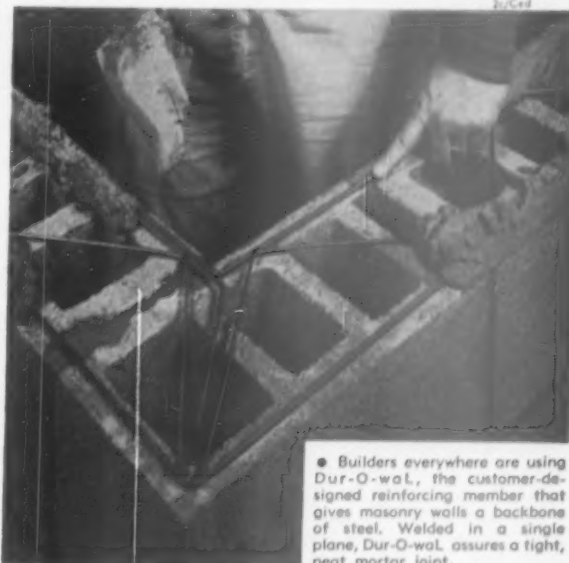


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## Trouble Shooting, Repairing and Overhauling

At times, truck trouble can be one of many things. A mechanic who has the ability to diagnose a down-time problem and come up quickly with the right answer is a trouble-shooter. The art itself is called trouble-shooting. Trouble shooting is a knack. Some mechanics have it; others don't. Whenever a mixer truck breaks down and the cause of the trouble may be difficult to determine, a good trouble shooter should be sent on the road call.

Because trouble shooting is a most important factor in holding down-time to a minimum, every producer needs a maintenance employee who has this ability. If you have such a man in your garage personnel, you are most fortunate.

Most maintenance manuals, issued by truck manufacturers, contain sections on trouble shooting. The information contained in these sections should be completely familiar to each and every mechanic. Yet, a great many employees of our industry, posing as mechanics, have never studied the information contained in these sections.

Insist that your mechanics read all trouble shooting literature that is available. Constantly seek improvement on trouble diagnosis. Pick out your best trouble shooter. Whenever possible, send him on questionable road call jobs.

Finding out the cause of trouble is not always an easy task—even for an efficient, experienced mechanic. Spotting the cause may take more time than correcting the trouble. Even locating a mechanical or operating noise is sometimes quite a chore. Just as an illustration of trouble shooting procedures, let us consider one simple step:—when a truck is knocking, the first move should be to stop the truck and disengage the clutch. It is a good bet that a continuing noise is coming from the engine. After the engine has been determined as the source of the knock, the noise, through planned checks, careful study, and regular routines, must be further isolated so that the trouble can be determined and corrected.

A truck that gave us overheating trouble on Monday was still acting up on Friday of the same week. Nuisance, down-time had occurred each day of the week. Three road calls had been made. The point is that a good many conditions or factors may contribute to overheating; such as, the driver of an overloaded truck might have been lugging the motor, tires under inflated, not enough water in the radiator, faulty hose connections, radiator core defective or clogged, thermostat shot,

and several other trouble possibilities.

Studying that week's down-time record for the overheating truck would give any producer a slow burn. In reviewing the series of incidents, we decided that we were partially at fault for the extra costs, excessive down-time and poor service that had naturally developed.

We kept putting the same driver back on the truck with absolutely no further consideration of his qualifications; in fact, we had put him back without questions or explanations. There had been no follow-up—no checking on the mechanics' work. No one had asked the garage man who made the first call if he was certain that the truck was ready to go.

The truck hadn't been scheduled for further maintenance attention. We had just assumed that everything was all right. In this business, you don't assume; you find out.

A case of trouble shooting would be the following: — two tandem trucks of the same make were broken

down and out of service. By taking a tandem spring and a transmission out of one truck, we were able to get the other unit back into operation. Except for the alertness of a mechanic, two trucks would have been idled.

Because these two tandems were of the same make, we got a little break on customer service while waiting for parts. Standardization of parts can result in substantial savings where a large fleet of trucks is involved. For example, if an operator is using both regular trucks and tandem units, it is good thinking to have identical engines on both types of equipment.

Most trouble shooting involves procedures that help to get a producer out of trouble;—e.g., after a breakdown has occurred. There is a form of trouble shooting that, by helping to prevent down-time, keeps a producer out of trouble. At our operations, certain daily checks made by drivers on operating condition of equipment are given the title "Quick Trouble Shooting"—(see page 210, Dec.). On every

## TRUCK CARE SUGGESTIONS

1. Equipment superintendent, mechanics, greasers, and drivers should cooperate in an all out effort to properly maintain trucks so that unnecessary down-time will be avoided.
2. One man should be assigned the prime responsibility for truck maintenance.
3. Daily checks on truck and mixer should be made by each driver. Each day, driver should prepare an operating condition report on his equipment.
4. Whenever a truck is being lubricated, greaser should make a quick trouble shooting check up; on slow days, a driver should make a similar check up on his own truck. (See p. 210, Dec.).
5. A realistic schedule should be worked out for regular greasing of equipment. When needed, equipment must be ready to roll. In the busy season, keep trucks going by working on them during the noon hour, at night, and over the weekend.
6. Based on age and condition of equipment, a planned schedule of other truck servicing, including checking, inspecting, tightening, adjusting, repairing, and overhauling should be regularly carried out.
7. Establish procedures that will enable you to plan ahead for major repairs and overhauls. Take full advantage of slow periods.
8. Always seek a solution to recurring trouble.
9. Make certain that mechanics have necessary tools, parts, and supplies available when they are needed.
10. Properly file parts catalogs and instruction manuals.
11. Study and follow manufacturers' instructions for lubricating, adjusting, and repairing equipment. Develop effective trouble shooting techniques.
12. Hold regular meetings to consider maintenance problems and plan schedules.
13. Properly tag parts in inventory to facilitate replacement. Make sure that salvaged parts are usable.
14. Use regular reports to establish control over maintenance work. Prepare cost figures to develop overall operating and maintenance costs for each unit.
15. When repairs or other costs show excesses, the causes of these excessive expenses should be determined and corrected.
16. Get rid of old trucks that are costing too much to maintain.

lubrication job, similar checks are made by the greaser.

It isn't possible in this article to give more than general hints on care of trucks. You should either have a reliable, trained mechanic, train one, or get a qualified maintenance employee. There should be a constant effort to improve maintenance operations. In December, our firm sent one of its mechanics to a 5-day truck maintenance course held at Michigan State University, Lansing, Mich, which was co-sponsored by the Michigan Ready Mixed Concrete Association and the Ohio Ready Mixed Concrete Association. I believe that someday all area associations will annually sponsor similar programs.

With a mixer truck, a large percentage of repair problems originates in the motor. A mixer truck engine can run into a lot of trouble. The engine may lack power, noises develop, knocks are heard, engine runs erratically, idles improperly, back-firing occurs, popping, spitting, or detonation put in their appearance, acceleration is bad, engine misses in pulling, hard to start, excessive amounts of gas or oil are consumed, valves fail, crankshaft or bearings cause trouble, or low oil pressure develops.

Necessary corrective measures may include adjusting, grinding, or replac-

ing valves and parts; correcting cylinder head conditions; replacing piston rings or pistons; setting spark timing; cleaning, adjusting, or replacing spark plugs; cleaning air cleaner; adjusting choke mechanism; replacing thermostat or fan belt, flushing cooling system; adjusting, overhauling, or replacing carburetor; adjusting end play; reconditioning or replacing crankshaft; adjusting or replacing bearings; replacing gears with matched sets; overhauling or replacing fuel pump; going to a higher octane rated gasoline; cleaning up combustion chambers; removing dirt and other foreign material from fuel system; tightening or replacing gaskets; replacing condenser; correcting wiring; overhauling or replacing distributor; changing manifolds; replacing muffler; overhauling engine; installing a new battery; overhauling starter and drive; cleaning, adjusting, or replacing points; drying out moisture; setting clearances; checking and setting governor; regularly servicing oil and oil filter; and replacing bushings.

The corrective procedures may require anything from an oil change to a complete engine overhaul. For proper diagnosis and efficient corrective measures, a producer must provide adequate facilities, insist upon effective maintenance procedures, and em-

ploy only competent mechanics.

The use of tandem equipment in attempting to haul bigger legal payloads has added greatly to the truck maintenance problems of many producers.

Tandem assembly trouble costs real money. A principal point in keeping this type of maintenance expense at a minimum is to buy the right kind of tandem equipment.

Within weeks, we experienced comparable tandem down-time on two trucks of the same make with two \$700 charges in a row, plus some expensive down-time. I didn't feel too kindly toward the truck salesman on his next call. However, he got me to admit that we certainly shared responsibility for the breakdowns because we weren't able to show by our records that these trucks had been properly lubricated and serviced. The salesman was also able to point out some convincing evidence that the drivers had abused the trucks, both in lack of care and faulty operation.

Recently, one of our competitors who runs a good maintenance shop had a loaded mixer drum roll off a truck while the driver was turning a corner. Sometime ago, we had a truck frame collapse under the weight and stress of a truck mixer. Too frequently mechanics have not given sufficient at-

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Tandem axle trucks with front wheel drive, 10 forward speeds, overdrive, brand-new mud and snow tires. Carry maximum loads, give extra power you need in "rough going" . . . at LESS, often half the COST of conventional new trucks.

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tention to stretched body U bolts and weakened truck frames.

Actually, several truck manufacturers have not sufficiently reinforced the truck frames on some of the new tandem units that are being sold to ready-mixed concrete operators. We hear many reports of truck frames cracking just ahead of the bogie. Trouble with frame cracks and distortion is a serious problem of our industry. Before a new truck is placed in operation, its frame should be thoroughly examined. If there is any doubt, the truck frame should be strengthened to the point where there can be no question as to its ruggedness. Whenever an operator's tandem trucks are being serviced, the frames should be carefully checked. No truck that requires frame repair should ever be put on the road.

A producer can help to stop tandem assembly trouble by (1) buying the right kind of equipment for the job; (2) insisting upon correct driver operation; (3) using proper lubricants in hypoid, worm gear and pinions—very important; (4) thoroughly lubricating where needed—steel bushed bogies require systematic lubrication; non-lubrication of steel bushed bogies means certain trouble; (5) considering only rubber bushed bogies on future purchases of equipment; (6) maintaining

proper alignment through examination, adjustment, and tightening of torque arms and mountings.

Efficiency of truck overhauling is a prime determinant in minimizing down-time. This work shouldn't be done in your own shop just because you have extra men on your payroll during the winter time. Unless you have competent mechanics and adequate facilities, job the work out. Such work as refacing valves, fitting piston pins, resizing pistons, having crankshafts reground or cylinders rebored can be jobbed out at economical cost.

One place to save money on motor overhauling is on a valve seat grinder. An efficient, adaptable seat grinder can be purchased for approximately \$200. With capable men to do the work during slack periods, this is a good tool to have on hand. Also, where cylinders are equipped with sleeves, a sleeve puller can generally be borrowed and sleeves inserted at a saving. Reringing the motor is another job that many ready-mixed concrete garages can safely and economically handle.

On mixer trucks, when engine heads are pulled off after approximately 40,000 miles, a valve grinding job is a "must" and there should be a thorough inspection at this time. The cost-minded, service-conscious producer goes all out in completely overhauling the unit so that the engine will be in top operating condition when reassembled. This assures that a motor so conditioned, will perform efficiently during the busy building season with a minimum of down-time.

A producer facing major motor repairs has his choice of overhauling the unit, getting a used engine replacement, obtaining a rebuilt engine, buying a new short block assembly, purchasing a stripped engine, or going all out for a completely new engine. Obviously, an operator not financially strong, will go for a limited overhaul, a used engine, or at best a rebuilt unit. A cost-minded producer, enjoying a profitable operation, will be thinking of reduced down-time, improved service, extended lengths of time between overhauls, and lower operating costs. To get more freedom from breakdowns and down-time, he will be willing to go for a larger parts bill and a new engine.

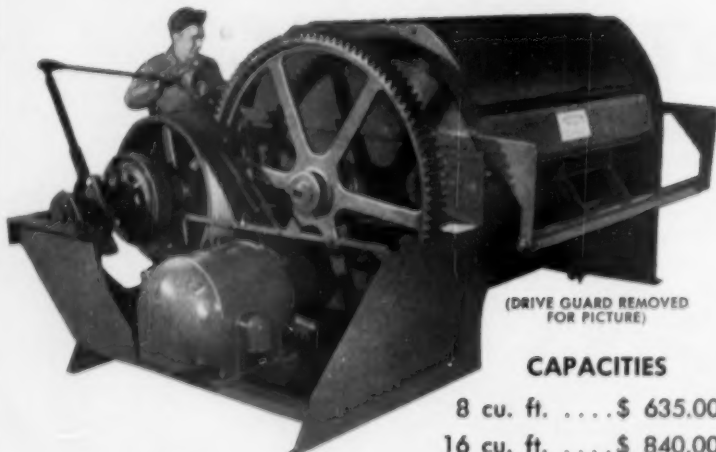
Unquestionably, when a truck is otherwise worth the investment, a producer who installs a new block assembly or a new replacement engine is on firm ground. On most overhauling (taking advantage of replacement parts kits) it is good thinking to start over again with major parts all new.

In any sizable fleet maintenance program, effective truck care is prac-

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tically an impossibility unless adequate records are kept on each individual piece of equipment. At our operations, we try to keep adequate records on each trucking unit. We also try to keep the record system from becoming burdensome. The head mechanic keeps a simple daily record of all maintenance work. The fleet superintendent summarizes this work on a master sheet (one for each trucking unit).

Adopt a Preventive Maintenance Program that fits your needs. Put one key man in charge, support his efforts, and hold him responsible. Provide necessary facilities and competent maintenance personnel. Carefully check down-time interference with customer service. Do everything in your power to bring operating and maintenance costs under close control.

## SOUTHEAST MEETING

(Continued from page 223)

the Portland Cement Association, told block producers that the Portland Cement Association believes housing is one of the biggest markets in the country today, and offers one of the best fields for future expansion. He spoke on "Promotional Plans for Concrete Masonry," on the part of the P.C.A.

Mr. Westby described the broad scope of scientific research being carried on at the Association's research and development laboratories and referred to the Association's early work on shrinkage, rain penetration, fire resistance and high pressure steam curing. He said the laboratory recognized that shrinkage cracking is of vital concern, has made an exhaustive study and is preparing a report on methods of curing and drying based on three-year study. Carbon dioxide shrinkage, he said, has been causing concern.

Mr. Westby referred to the fact that varying patterns of laying block in the past have been limited to non-load-bearing walls. Now a way is being sought to work out coursing patterns which produce interesting effects in load-bearing walls. He said that the P.C.A. is producing a movie on the concrete masonry industry in 1956 and that new advertising is to be directed to the home builders to get a higher percentage of new homes of concrete.

The speaker said that more attention will be given to smaller size block, such as 4-in. and split block. Referring again to the size of the housing market, Mr. Westby said that 850,000 new families are being formed annually and 250,000 dwellings are destroyed by fire or other causes. In addition he said that farm families moving to cities need about 150,000 homes a year. All in all, the speaker said, it

is estimated that at least 1,250,000 new dwellings are needed annually.

## N.C.M.A. Promotion Plans

William P. Markert, director of promotion of the N.C.M.A. discussed that association's future promotion plans, entitling his talk, "Build a Better Mouse Trap." In explaining this title, Mr. Markert said: "It isn't enough just to make a good block, you have to get out and advertise it, merchandise it, sell it." Mr. Markert's talk was illustrated with charts, diagrams and colored slides.

"Block construction is not new by any matter or means. What we have to sell is new concepts of using an already accepted product," Mr. Markert said. "N.C.M.A.'s advertising and promotion is based on the plan of selling a new concept to architects, contractors, engineers and the general public. In short we are selling a new idea.

"Let's just take a brief look at what the forecasters are predicting for construction. In a word the best description of the construction future market is SHORTAGE. With a record peak of 42 billion dollars predicted for 1955, shortages have cropped up in steel, cement, plywood, copper, aluminum, wallboard and lath and people who are willing to do a day's work after they get to the job.

"Construction costs have climbed to almost seven times what they were in 1945. I might add that almost the only building material that has not kept pace with the bull market in materials costs is concrete masonry.

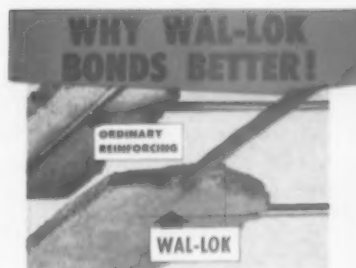
"A recent general materials market survey reveals that in the past summer materials costs rose faster than labor costs, and this does not include the high cost of slow deliveries and waits for materials or purchases at gray market prices.

"Currently costs seem likely to remain steady at their all-time highs. Lumber prices have sagged due to over-production, curtailment of government housing and the slackening in home building.

"The latest predictions indicate that new housing starts will not reach the all-time record highs expected in the earlier part of the year. An official of Housing Securities, Inc., a national mortgage clearing house, is predicting a 10 percent decline from housing starts in 1954. The total this year is expected to reach 1,250,000.

"The builders are blaming the government order tightening credit terms for the failure of housing starts to set a new record and pressure is steadily building up for an easing of restrictions in March.

"If the Administration eases credit curbs, it will stimulate an already



When a mason uses reinforcing in a masonry wall, he lays the reinforcing on the last course like this

With ordinary reinforcing, all the wires are butt-welded in one plane. This allows the side bars to rest right on the blocks. Then the mason

puts on his mortar. Steel doesn't float so, obviously, the mortar can't get under the side bars. So the mortar is only bonded to the top and sides.

With Wal-Lok, the Tie Rods are welded across the Side Bars. The mason puts Wal-Lok in the wall with the Tie Rods DOWN

This holds the Side bars up away from the blocks, and the mortar completely surrounds each Side Bar

With Wal-Lok, the mortar grips all the way around! When you try to hang onto a rod, you don't hold it with your finger tips You

hold it in your fist with your fingers wrapped all the way around.

Why expect mortar to do something you can't do? All Wal-Lok is also de-formed and knurled for a positive bond the full length.

The value of any reinforcing depends entirely on its bond to the mortar.

All this while holding an overall thickness of 7/32".



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**LINTEL  
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If you do you'll find a sizable, profitable market with the customer you are now selling.

Your next step will be to ask for a thorough description of the KENT Lintelator. This simple, relatively inexpensive machine has been in successful use for several years producing lintels that are popular with builders.



Lintelators are available for making lintels up to 8" x 12" x 10'8". With this ingenious machine up to 1000 feet of lintels has been produced by one man in a day.

Texture just like that of the blocks appeals to builders and they are especially pleased to be able to dispense with steel lintels which involve another building craft with frequent delays.

Write for the LINTELATOR Bulletin now while you're thinking about it.

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DIVISION OF THE LAMSON & SESSIONS CO.

CONCRETE PRODUCTS MACHINERY SINCE 1925

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healthy building boom and aggravate the materials shortage situation. This no doubt will mean higher materials costs next year.

"Labor costs are expected to rise again next year. An average increase of about 12½ cents an hour was gained by the building trades in 1955 and experts see a similar trend next year. I am reviewing the cost situation because it has an important bearing on the overall situation. From the marketing point of view, the continued costs rise indicates a careful review of the situation in our own industry and the need to cast a cold eye everywhere to make sure that we are not trapped in a profitless prosperity squeeze. Above all it requires new efforts to cut production costs, smart persuasive selling and plenty of it.

"There is a solid basis for believing that 1956 may be the biggest construction year on record. The U. S. Department of Commerce is taking a very optimistic view of 1956. They predict construction levels will reach a record 44 billion dollars next year."

Mr. Markert concluded his talk with slide pictures describing the hard-hitting national advertising campaign and new literature.

The final talk on the program was by Earl W. Peterson, of Omaha, Neb., president-elect of the National Concrete Masonry Association. He predicted that block plants of the future will be completely automatic. Vision is essential to progress he said. He emphasized the importance of plant safety programs and pointed out that accident prevention work inevitably effects great savings. In closing he pointed out the advantages of all associations of concrete masonry manufacturers being affiliated with the national group.

#### Texas Election

James C. Fountain, Greggton, Texas, retiring president of the Texas Concrete Masonry Association, announced that the following new officers and directors had been elected for that association: president, Ervin Hahn, Atlas Building Products Co., El Paso; secretary-treasurer, Nolan Browne, Nolan Browne Co., Dallas; director for three-year term, C. T. Crowe, Crowe Gulde Cement Co.; for one-year term, Harold M. Dodds, Texarkana Concrete Products Co., Texarkana, and Charles Bomar, Featherlite Corp., San Antonio.

Other program features outside of the business sessions included a luncheon for men at the Shamrock Monday noon at which Bill Daniel, of Liberty, Texas, rancher, lawyer and legislator, was the guest speaker.

(Continued on page 234)

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That Pays Big  
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ABREAST  
WITH  
INDUSTRY  
TRENDS  
THROUGH  
ROCK  
PRODUCTS

## PIPE SCHOOL

(Continued from page 206)

material can be added in solid or liquid form, the latter by means of a dispenser. Advantages include reduction of time of initial set and final set (each by two-thirds), greater strength at any given time, substantial increase in ultimate strength (e.g., 6-11 percent over a 3 to 5 year span), better workability, greater density, and cold weather protection.

Mr. Adams remarked that the use of calcium chloride can shorten the steam curing cycle by a few hours by reducing both the holding time and the soaking period. He referred to recent experiments in England involving the use of calcium chloride in steam curing of small test specimens.

A paper on "Testing High Strength Cores from Concrete Pipe," by Henry Eames, New England Concrete Pipe Corp., was read by Herman G. Protze in Mr. Eames' absence. The speaker stressed the importance of taking cores properly and using the correct testing procedure. He discussed several types of core drills on the market, including a recently-developed diamond-tipped unit which yields a polished core. The core should be taken from the mid-third of the pipe and should represent the entire wall thickness. For large

pipe, 4-in. diameter cores are recommended, 3-in. cores for small pipe.

Before capping, the core ends should be trimmed with a saw rather than a chisel to obtain flat surfaces. High quality capping materials such as Leadite were recommended. A study was discussed showing that use of improper capping materials resulted in a strength loss of about 25 percent for 3000 p.s.i. concrete and up to a 65 percent loss for concrete over 10,000 p.s.i. The caps should be level and about  $\frac{1}{32}$ -in. thick for best results. Several capping devices were described. The speaker emphasized that the capping material should not be re-used.

In an illustrated talk entitled "Combating Sales Promotion by Competing Industries," T. K. Breitfuss, American Concrete Pipe Association, compared concrete pipe with clay, corrugated metal (including coated), asbestos-cement and fiber-type pipe. The speaker outlined positive sales arguments stressing the supremacy of concrete pipe, including strength, economy, hydraulic efficiency and permanence. Concrete pipe is stronger and can be reinforced for any load or fill, and it is more economical in initial cost and cost per year of service life. Regarding hydraulic efficiency, concrete pipe (and clay pipe) have a roughness "N" value of 0.013 compared to 0.024 for corru-

gated metal pipe. In sewer and drain lines, this gives concrete pipe a size differential over corrugated pipe ranging from 3 in. for 15 to 21 in. dia. pipe to 24 in. for 84 to 96-in. dia. pipe. In spite of similar "N" values, concrete pipe is effectively smoother than clay pipe, because in a given line concrete pipe joints are fewer in number and the clay joints are generally out of round. In addition, concrete pipe is longer lasting and has a greater service life according to the Bureau of Internal Revenue. Mr. Breitfuss cited the September issue of *Concrete Pipe News* which lists 136 American cities using concrete pipelines older than 25 years and 27 cities using concrete pipelines more than 70 years old.

By means of slides, the speaker showed common faults of the competing pipe products. Corrugated metal pipe was characterized by leaky joints, rust spots, and "floating" sections, and in the case of culverts, reduced openings caused by road equipment. Regarding coated metal pipe, the coating is known to fall off or drip in hot weather, thereby reducing the hydraulic efficiency.

### Panel on Manufacturing

In the Wednesday morning panel on manufacturing problems E. F. Bepalaw, Choctaw, Inc. was the moder-

## Concrete Filler Block for *Fire-Safe* FLOORS and ROOFS

Why make only the walls of a new building fire-safe and permanent?

Why not also apply these practical advantages to the floors and roofs? Concrete Filler Block, produced on a Besser Vibrapac, make it possible for the ENTIRE structure to be fire-safe and permanent . . . at LOW COST.



## ALL made on a BESSER VIBRAPAC

Concrete Filler Block are made on a Besser Vibrapac . . . the same dependable machine that produces high quality concrete load bearing block for walls. And the same Plain Pallets are used. All types of filler block can be made in various sizes to coordinate with other modular materials and for all load conditions. Block plant operators can materially add to their profits by supplying their customers with BOTH wall and floor units. For further facts, contact your nearby Besser representative, or write:



Vibrapacs are versatile. They make ALL types and sizes of block on ONE set of Plain Pallets. Fully automatic. Off-bearer removes finished block with power hoist. No manual lifting.

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Here you have a choice of 18 shades—6 Reds, 3 Greens, 3 Browns, 3 Yellows, 1 Black, 1 Blue, and 1 Orange. Each shade is manufactured to meet the most exacting specifications for cement work—as recommended by the American Concrete Institute and the Portland Cement Association.

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East St. Louis, Ill. Easton, Pa. Emeryville, Cal.

ator. Carl A. Bluedorn, Zeidler Concrete Products Machinery Co., was the afternoon panel moderator. Among the many opinions or conclusions expressed were the following:

The 1/100-in. crack is not a sign of impending pipe failure; however, some customers reject pipe with even smaller cracks. One producer reported that the principle of autogeneous healing of cracks has been accepted in his area.

One company reported taking installation photos, especially on big pipe projects; these are used if any complaints arise.

To prevent joint mortar from freezing during installation, use of calcium chloride, heated aggregates, and heated water is recommended. One producer also suggested immediate backfilling.

Moisture meters for aggregates have been used successfully with the more plastic mixes (i.e., for cast or centrifugal pipe), but serve only as indicators for the semi-dry pipe mixes.

One producer reported using cast iron molds for casting Y's and T's, which are vibrated during the pour. Each form can be used several times daily. The products are steam cured for best results. The molds were reported to be expensive, and a large number were required for the variety of specials manufactured.

Another producer reported saving 10 percent cement by using fly ash (70 lb. of fly ash was substituted for 50 lb. of cement in the mix) in packerhead and tamp mixes, without reducing the strength materially. However, high temperature or steam curing were necessary for maintaining high strength. Fly ash also improved the appearance of the pipe.

One producer reported developing a mechanical scissors-type pipe unloader which is mounted on the trailer body. Another producer expedites deliveries by cubing 4- to 8-in. pipe.

Experience with lightweight aggregates in pipe manufacturing has been bad. There appears to be no advantage to making lightweight concrete pipe.

Several producers reported the successful use of two-way radio. Units are installed in delivery trucks, fork lift trucks, and superintendent and maintenance cars.

States having specifications for precast concrete arch pipe or elliptical pipe for installations with low head room include Montana, North Dakota, South Dakota, and Minnesota. Specifications are currently being written in Mississippi.

One company reported more accurate batching and cement saving by installing recording devices for the cement, aggregates, and water batchers.

These tend to keep the batching operator alert.

Several producers reported making 10-in. reinforced concrete pipe.

#### Movies

The fabrication and erection of pre-tensioned precast concrete bridge members were shown in a movie called "Bridge Ahead" produced by Concrete Products Co. of America, Philadelphia, Penn. A movie called "Tunneling," produced by American-Marietta Co., showed the manufacture of elliptical cast pipe and the unique method of tunneling developed by the Lamar Concrete Pipe Co., Saginaw, Mich.

A movie on a recently-developed revolutionary product called no-joint pipe was shown by G. D. Williamson, No-Joint Concrete Pipe Co., Yuba City, Calif. The pipe is laid directly in the trench with a unique horizontal slip-form type machine, using ready-mixed concrete. The method is somewhat limited to soils in which neat, dry trenches can be excavated. Presently the pipe can be laid in diameters from 24 in. to 60 in.; wall thicknesses vary from 2½ to 6 in.

Operations of the Zeidler Concrete Products Machinery Co., Waterloo, Iowa, and numerous pipe installations in Waterloo were depicted in a movie presented by Carl A. Bluedorn.

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For **QUALITY**  
**CONCRETE**  
**PIPE**  
**FORMS**

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Heavy Duty form is recognized as the STANDARD design and the finest concrete pipe form everywhere. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. If your pipe orders specify extra large sizes, odd shapes or unusual lengths, there's a Quinn form made to produce the finest pipe at lowest possible cost.

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## N.C.M.A. Program

NATIONAL CONCRETE MASONRY ASSOCIATION will hold its 36th annual convention on January 23 to 25 at the Hotel Roosevelt in historic old New Orleans. More than 1200 concrete masonry producers and representatives of allied industries are expected to attend.

### Monday, January 23

S. Carl Smithwick, outgoing N.C.M.A. president, will preside at the opening session, beginning at 10:00 A.M., and will give his annual report. Carroll Strohm Jr., secretary-treasurer, will present the treasurer's report, and A. G. Streblov, chairman, nominating committee, will conduct the election of directors. Special association reports will be given by R. E. Copeland, director of engineering, W. P. Markert, director of promotion, Theodore Leba Jr., manager, Washington office, and E. W. Dienhart, executive secretary. A talk on "Effective Public Relations for the Small Producer" will be presented by Edgar Forio, vice-president, Coca Cola Co., Atlanta, Ga.

During the afternoon session, Max H. Miller, United Cement Products Co., Wichita, Kan., will preside. Talks will be given by Wm. M. Avery, editor, *Concrete* magazine, on "Cement Shortage in the Block Industry"; Philip Paoletta, Plasticrete Corp., Hamden, Conn., on "An Approach to Meeting the Competition of Poured Basements"; Lee C. Shaw, Seyfarth, Shaw & Fairweather, Chicago, Ill., on "Significance of the Guaranteed Annual Wage Negotiations"; and Thomas S. Holden, F. W. Dodge Corp., on "Construction Outlook".

The evening will be highlighted by a Mardi Gras costume party dance held in the Grand Ballroom and featuring both a dance orchestra and Dixieland band.

### Tuesday, January 24

The morning session, beginning at 10:00, will be presided over by W. R. Ireland, Atlanta Aggregate Co., Atlanta, Ga. Following a Chamber of Commerce film on "People, Products and Progress—1975," addresses will be given by Wm. R. Connors, first vice-president, Bricklayers, Plasterers, and Masons International Union; T. L. Goudvis, Concrete Masonry Corp., Elyria, Ohio; and Clayton Rand, editor, author, etc., Gulfport, Miss. Mr. Goudvis, who will talk on N.C.M.A.'s long range research and technical program, will also preside at the afternoon session.

This session will feature talks by M. L. Clement, director, Southern Building Code Congress, Birmingham, Ala., on "Regional Building Codes

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**NEW PROFITS**  
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**READY MIXED CONCRETE**

The new  
**ROCKET**

gives you  
**BIG SAVINGS**



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**HYDRAULIC CHUTE CONTROL**  
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Controls grouped for easy access.

**ALUMINUM EXTENSION CHUTE**  
attaches to 36" fold-over  
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Total length: 12' 6".

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kit included; you can handle any  
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truck-type transmission,  
Repair parts readily available.

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one-piece cast steel  
precision machined ring.

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**BADGE OF DEPENDABILITY**



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- ☐ New Rocket Revolving Drum Truck Mixer **CP**  
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### WITH THE NEW, COMPLETE [SC]<sup>2</sup> SET-UP

This is what you get:

**1. A NEW CONTINUOUS AUTOMATIC METHOD OF MOISTURE DETERMINATION.**

This uses a high frequency electric current instead of resistance which eliminates most of the variables that make resistance measurement unreliable. It measures moisture content of both fine and coarse aggregates and also artificial aggregates to a tolerance of 1/4%, through the whole range from 0% to 15%.

The probes are located just above the discharge gates which measures moisture content as the aggregate drops into the weigh hopper. This gives the moisture content of the whole batch rather than that of a selected portion, which happens when the probes are located in the weigh hopper. Moisture content, so measured, can be read from a dial or recorded on a graphic chart.

**2. A NEW TOLEDO AUTOMATIC BATCHING SCALE FOR LARGE PLANTS.**

Uses [SC]<sup>2</sup> compensation discs to correct for moisture content. This, with the automatic moisture determination, enables the operator to deliver the dry weight of wet aggregates to a tolerance of 1/4%. One push button starts the batching which proceeds automatically to completion. It is simple, fast and accurate with no complicated electronic parts requiring expert service.

**3. AN AUTOMATIC GRAPHIC RECORDER** that records the delivered weights of aggregates, water and cement on a single chart 12 inches wide, using different colored inks for aggregates and cement.

**4. A NEW QUICK METHOD OF DETERMINING FINENESS MODULUS.**

The above equipment is now available on a lease, lease-purchase or straight purchase basis. It will be shown at the N. R. M. C. A. Chicago Convention. Be sure to see it. For further information write

### Scientific Concrete Service Corporation

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and Their Influence on the Technical Requirements of Concrete Masonry"; Carroll Strohm Jr., Nashville Brecko Block & Tile Co., Nashville, Tenn., on "Developing a Profitable Market for Pre-stressed Concrete Masonry Floors"; Cedric Willson, Texas Industries, Inc., Dallas, on "Economic Considerations in the Selection of High Pressure Steam Curing Systems"; and R. E. Copeland, director of engineering, N.C.M.A., on "A Rational Approach to Control of Cracking".

The evening will be devoted to the Annual Banquet held in the International Room, which will feature an outstanding floor show and dancing.

#### Wednesday, January 25

Earl W. Peterson (Ideal Cement Stone Co., Omaha, Nebr.), president-elect, N.C.M.A., will preside at the concluding morning session. Association safety contest awards will be presented by Henry Quaritius, Nailable Cinder Block Corp., New York, N. Y. A panel on "Accelerated Drying Facilities, Methods, and Costs" will also be held; participants include Benjamin Wilk, Standard Building Products Co., Detroit, Mich.; Verne Frese, Layrite Concrete Products of Seattle, Inc., Seattle, Wash.; and Ralph Reiner, The Cleveland Builders Supply, Cleveland.

#### S. E. BLOCK MEETING

(Continued from page 230)

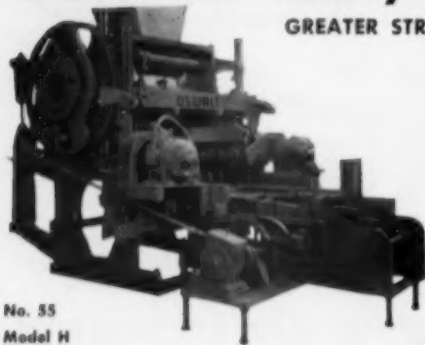
Monday afternoon the convention guests, accompanied by the ladies, were taken on a bus tour through Houston, stopping at the famous San Jacinto Monument and Museum. Members of the party were then taken to the Cave Room of the San Jacinto Inn for cocktails, followed by a sea-food dinner.

On Tuesday the annual banquet in the Shamrock ballroom was preceded by a cocktail party at which appetizers were served made from two 36-lb. Columbia river salmon, shipped by air to Houston by Paul P. Klemens, Columbia Machine Works.

## OSWALT Heavy Duty, Super-Service BLOCK MACHINE

GREATER STRENGTH AND STABILITY  
LONG SERVICE

SMOOTH RELAXED OPERATION  
LOW MAINTENANCE



This modern machine is built with full 2" thick stress-relieved frame with all matching parts machined for perfect fit. Boosts output without sacrifice of quality.

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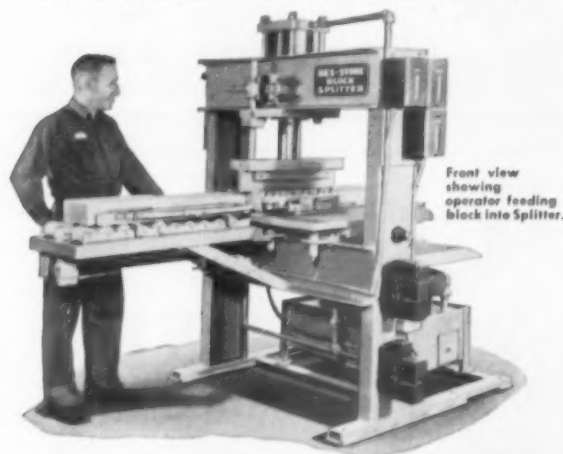
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### Install a **BES-STONE** Splitter

You can greatly increase block sales and add to profits by using a Bes-Stone Block Splitter. Architects and builders are sold on Bes-Stone Split Block because of its beautiful quarried stone appearance and wide range of adaptability. With its powerful, hydraulic operation, the Bes-Stone Splitter handles up to 900 units per hour. All straight line cuts. No cull block. Quickly adjustable for various heights. Finished Split Block is automatically removed from under the splitting knife by the incoming block. Quiet, safe operation.



Front view showing operator feeding block into Splitter.

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Trims off the ends of split block up to 8" in width. Pressure is supplied by a hand-operated hydraulic pump having a capacity of 12 tons. Compact, lightweight, and easily portable from job to job.



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Complete Equipment for Concrete Block Plants  
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Cut Steam Curing Time in Half. Get High Early and Final Strength. Double Output of Poured Products. Speed Up Delivery on Pressed and Tamped Products. Reduce Breakage to Minimum. Get Top Quality at Lowered Cost.

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Recent exhaustive market studies have proven so encouraging that the St. Lawrence Cement Company has decided to double the capacity of its plant-in-construction at Clarkson, near Toronto. Scheduled 1957 production of this plant is now set at 12,000,000 bags of Portland cement, a total of 18,000,000 bags when combined with the Quebec plant's output.

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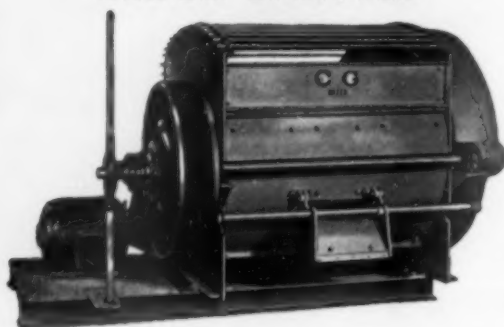


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Ni-Hard or Abrasion Resisting  
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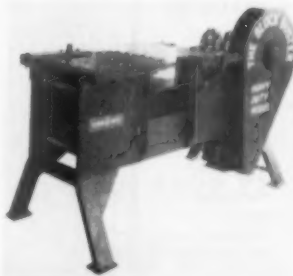


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**BABY GIANT VIBRATING TABLE**

A must for all ready-mix and concrete products plants. Directional vibrating—no counter shafts, V-belts or sheaves. Variety of heavy metal forms available. Make extra profits from leftover "mud" and idle labor.



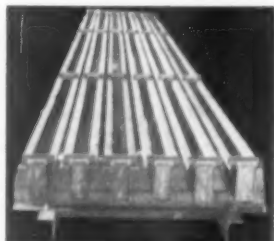
**THE FINEST IN BLOCK SPLITTERS**

With precision performance built in. Extremely fast—Heavy duty—26" extra hard blades. Motor driven—No hydraulics.



**MARVEL DRAIN TILE MACHINE**

Produces highest quality tile. Fast—simple—rugged. Inexpensive. Also available in all power Deluxe Model.



**MULTIPLE LINTEL FORMS**

Win over competitors with these multiple lintel forms and vibrating table. Comes complete with stops and air vibrator to produce almost 200 linear feet per pour.



**P & S ELECTRONIC MOISTURE CONTROL**

The proven automatic way to insure the same moisture content of every batch. Over 400 installations in block and pipe plants over the country.

**COMING SOON**  
Futuristic equipment.

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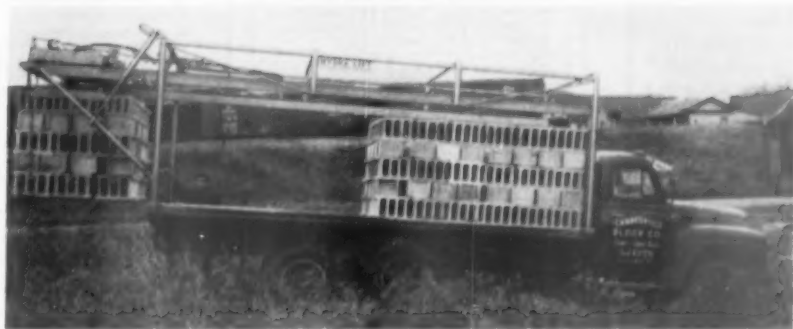
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# HYDRO-LIFT UNLOADER

(Patents Pending)

**CRANESVILLE  
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**AMSTERDAM,  
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### COSTS DROP! PROFITS JUMP!

—when HYDRA-LIFT unloads your blocks. That's why the Cranesville Block Company is already considering the purchase of their 2nd HYDRA-LIFT.

Another HYDRA-LIFT user, Mr. S. W. Williamson, President of Samson Block and Supply Co., Inc., Media, Penna., says: "We wish to comment favorably on our

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CHECK THE WEIGHT!

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**Mfrs. of  
BLOCK UNLOADERS for  
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# NR Plastic

1 TABLESPOON OF  
DRY POWDER Per  
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Stearns #7 & 9 Joltcrete ... \$500.00 each  
(Joltcrete owners at this price buy one for spare parts.)

Mold Boxes #7 & 9 ..... 150.00 each  
2—Stearns Clipper Strippers .. 250.00 each  
1—Monroe 28 Cu. ft. Concrete Mixer ..... 995.00  
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1—40 Cu. ft. Stearns Skip Loader 1000.00  
100—Racks for cored steel pallets ..... 10.00 each  
100,000 pressed steel pallets in stock  
(Send tracing or sample for quotation).

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3 Block Lith-I-Bar Machine, with offbearer and attachments for 4", 8", 12", and chimney block.  
1200 plain steel pallets, 17 1/2 x 17 1/2.  
18 cu. ft. Stearns Mixer with material conveyor.  
Available immediately at an attractive price.  
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Besser 18 cu. ft. mixer complete with 18 cu. ft. skip hoist, tracks, countershaft drive and clutch. No motors or paddles. Anti-friction bearings. Outfit never used.

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### USED EQUIPMENT FOR SALE

1—29 Joltcrete, complete with necessary motors & controls; complete attachment for 4" & 8" block (Make us an offer)

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40,000—8" pressed steel pallets—code word

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Appley-Yellen 1-Block Semi-Auto. Block Machine  
Appley Mixer—3 H.P. Motor—Skip—1 H.P. Motor—15 H.P. Compressor—Pallet Offbearer—Hydraulic Lift Truck—Mould Boxes for 4", 8", and 12" Blocks—5000 Pallets—4"—8"—12"—72 Steel Block Racks

A complete Plant ready for operation. Capacity 400 blocks per hour. Has made only about 100,000 blocks. Located in Northeast.

**BOX N-72, CONCRETE PRODUCTS**  
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### PRICED FOR QUICK SALE

GO CORP JUNIOR TWIN block machine complete with power carriage; agitator; offbearer; compressor. 4", 8", 12", and chimney block attachments. 3200—8"; 2000—4"; 600—12"; pressed steel pallets. 500 cast chimney block pallets. Everything modular.

STEARNS MODEL A CLIPPER with attachments to make 5x8x12" building tile; 5x4x12" partition tile; 5x8x10" building tile; 5x8x10" corner tile; 4000—5x8x12" pallets; 3000—5x8x12" sash pallets; 4000—5x8x10" pallets; 2000—5x8x10" return corner pallets; 7000—5x4x12" pallets. All pallets cast. Everything modular.

ANY OF ABOVE MAY BE PURCHASED SEPARATELY.

Your mid-west GO CORP dealer

**OLSEN SALES CO.,** Rock Rapids, Iowa

### Small Block Plant Owner

I have quite a supply of used machines that are replaced by larger plants who need larger production. Some of these setups are in very good condition. As they are a surplus to me, I will sell on any reasonable terms with payments as low as \$50.00 a month.

**Mid-Western Concrete Equipment Co.**  
Box 646 Mukwonago, Wis.

### FOR SALE

Fork and platform power lift trucks, used and guaranteed factory rebuilds.

**ERICKSON POWER LIFT TRUCKS, INC.**  
Saint Anthony Blvd. & University Ave. N.E.  
MINNEAPOLIS 18, MINNESOTA  
Phone—Sterling 1-9508

### FOR SALE—USED EQUIPMENT

1—P. C. George Block Machine with 8x8x16; 4x8x16; 10x8x16; Attachments & Pallets.  
1—McCracken Drain Tile Machine 8" to 16".  
1—Small Drain Tile Machine 8" to 12".

This equipment in working condition. Replaced by larger equipment. Contact **JEFFERSON CEMENT PRODUCTS CO.**  
Phone J-92 Jefferson, Iowa

### CUT OFF BLADES

Have several thousand Abrasive Co.—Machin abrasive blades. Ideal for cutting steel on regular masonry saw. 14" x 1" arbor. \$2.00 each. In lots of 10. Larger orders at a discount. 2 blade sample postpaid for \$1.00.

**Manhattan Concrete Products Co.**  
P.O. Box 238 Manhattan, Kansas

### NEED PORTLAND CEMENT?

Standard, High Early, and White conforming with A.S.T.M. spec, available in carload and shipload quantities. Our monthly tonnage allocation is offered subject to prior sale and final commitment from mill. For sample, spec., prices contact Edwapa & Lyons, 9023 W. Commerce St., Tel. General 20861, San Antonio, Texas. U.S. Sales representatives, Teller Portland Cement Co., S.A., Mexico City. Largest and most modern plant in the Republic. In operation over 45 yrs. subsidiary of Associated Portland Cement Manufacturers, LTD., London, England.

## WHERE TO BUY

### BLOCK PLANT FOR SALE

Located in City of 7,000 in central Michigan.  
Established ten years.  
No competition within 20 miles.  
Office, plant, two kilns, warehouse.  
2-year old Columbia 2-block Machine with 4", 8", 12" attachments, many specials.  
Racks for 2100 blocks per day.  
New steam boiler for curing, 7 trucks, front-end bucket loader, new fork lift.  
Aggregate no problem.  
Has grown from a gross of \$15,000 to \$80,000. Net profit last year over \$16,000.  
Reason for selling, other interests.  
**C. S. WARD**  
R. R. #3, Charlotte, Mich.

### FOR SALE

One late model #180 Fleming machine with press head, including the following mold boxes: 4", 6", 8", 10" and 12", also Flue block mold. These are new style cores. Over 2,000 new Transite pallets.  
This machine can be seen in operation at the Overton County Block Co., West Broad St., Livingston, Tennessee.  
This machine is priced very reasonably and is available with terms, the company is going into larger equipment. The machine is for sale by

**W. H. LACKEY, INC.**  
Kingsport, Tennessee

Experienced operations maintenance man for large concrete block plant eastern New York State. Technical competence, Besser Equipment. Cost conscious, ability to plan and direct, good salary. Write experience and references.

BOX O-3, CONCRETE PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

### GERSON'S GOOD WILL BUILDERS

Advertising necessities for the block industry. Line Pins, Twigs, Corner Blocks, Calculators. Complete catalog on request.

**GERSON CO.**  
82 Deering Rd., Mattapan, Mass.

### FOR SALE

Concrete block manufacturing, ready-mix, and associated supply business for sale. Over \$140,000. annual gross. Write, wire, or phone,

**Hothem & Baughman, Realtors**  
Coshocton, Ohio

### SITUATION WANTED

by experienced concrete pipe Superintendent, have had twenty-five years experience in the manufacture of concrete pipe Tamp machines packer head—poured pipe also Centrifugal, can also supervise installation of Irrigation lines.

BOX O-13, CONCRETE PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

### FOR SALE

1—18" AIR OPERATED SPLIT ROCK SPLITTER  
1—24" AIR OPERATED SPLIT ROCK SPLITTER

This equipment is in good condition with extra blades and head attachments. Write or Call

**Winchester Concrete Products**  
P. O. Box 571 Phone 3808 Winchester, Va.

### KEEP ABREAST WITH INDUSTRY TRENDS THROUGH ROCK PRODUCTS

## COLORS For Cement and Concrete

COLOR YOUR CONCRETE WITH LANSO CEMENT COLORS, available in 40 ATTRACTIVE shades. Suitable for all types of concrete products. Write for our new color card, copy of "Suggestions For Using Cement Colors", and for free samples and price list.

Manufactured by:

**Landers-Segal Color Co.**

73 Delavan St. Brooklyn 31, N. Y.

### GOOD WILL BUILDERS

Your contractor and bricklayer customers will be able to do quicker, easier, straighter work with UB Tools . . . tools that carry YOUR OWN COMPANY ADVERTISING. Linestretchers, Corner Ties, Line Pins, Twigs, Concrete Calculators. We also wholesale a complete line of Blocklayers' Tools. Write for literature and prices.

### UNITED BUILDERS

1822 Lindberg Dr., Muskegon, Mich.

### WANTED

Distributor or manufacturer's representative to handle complete line of concrete products machinery, protected territories, generous commission.

BOX O-4, CONCRETE PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

### FOR SALE CONCRETE PRODUCTS PLANT

Located at Montevideo, Minn. Equipment new one year ago. Manufacturing building blocks and drain tile. Very good outlet for both products. Will sell at Reasonable price.

**Hancock Concrete Products Co.**  
Hancock or Montevideo, Minn.

### WANTED

One Kirk & Blum Joist making table.

**W. N. RUSSELL & CO.**  
34-60 Albertson Ave. Westmont 7, N.J.

### FOR SALE

Joliette #9, complete with new batch mixer and ship loader, power offbearer, pallets, turntable, racks, Truckman rack mover, and Hyster lift truck. All equipment is in excellent running condition.

**Hirzel Coal & Builders Supply**  
1441 Woodville St. Toledo 5, Ohio

### FOR SALE

One Besser K-3 Semi Tamper Machine in excellent condition. This machine is accompanied by 2000 1/4 x 12 1/4 x 18 1/2 pallets and the following molds: 4", 6", 8", 10" and 12" molds, a Bull Nose Corner attachment and also a Jam attachment. This machine is located at the

**EDGERTON SAND AND GRAVEL CO.**  
421 Highway 84. Edgerton, Wisc.

**ENGINEER (MASTER MECHANIC) TO RUN CONCRETE PRODUCTS AND READY MIX PLANT. SALARY IN FIVE FIGURES.**

BOX O-9, CONCRETE PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

### USE PRE-CAST VIBRO TABLE:

• Eliminates air holes • Saves time, no need to clean • Turn pans every day in winter • Use dryer mix: get stronger stone • Produces smooth, uniform product.



For Literature

Write to:

**R. L. SPILLMAN CO.**  
Box 334-Station "Q"  
Columbus, Ohio

### ALSO MOLDS FOR:

Parking Curbs  
Chimney Caps  
Stepping Stones  
Splashblocks  
Stop Treads  
Wall Cap, etc.

### FOR SALE—WILL SACRIFICE

Lith-I-Block, L-5, 3 Block Machine. Complete with offbearer and with or without air compressor, with the following mold boxes:

1—8x8x16  
1—4x8x16  
1—6x8x16  
1—12x8x16

This machine 18 months old. Good operating condition. Can be seen operating until Jan. 30, 1956. Terms available.

**Odum Superock Block Company**  
3301 North 27th Avenue  
Birmingham 7, Alabama

### ENGINEERS

Large concrete pipe company has an opening with a future for you. Job will involve designing of equipment, experimenting with same, and liaison work between the equipment producer and the equipment user.

Applicant should be between 32 and 45 and willing to locate in the Midwest. Please write qualifications, experience, and salary expectations to

BOX O-7, CONCRETE PRODUCTS  
79 W. Monroe St., Chicago 3, Ill.

### FOR SALE

Heisel Ready Mix Concrete Plant 150 bbls Cement bin complete with screw, elevator and weight batcher. 45 Ton 3 compartment aggregate bin with weigh batcher.

Contact — Box 1522  
Durham, N. C.

### FOR SALE

1—#9 Riddell Dry Pan Cinder Grinder.  
Capacity 30 tons per hour.

BOX O-12  
**CONCRETE PRODUCTS**  
79 W. Monroe St., Chicago 3, Ill.

Man with experience in the manufacture of cast concrete pipe to act as Assistant to Superintendent. Metropolitan Area New York City. Advise experience and salary. Replies confidential.

Box N-95, Concrete Products  
79 W. Monroe St., Chicago 3, Ill.

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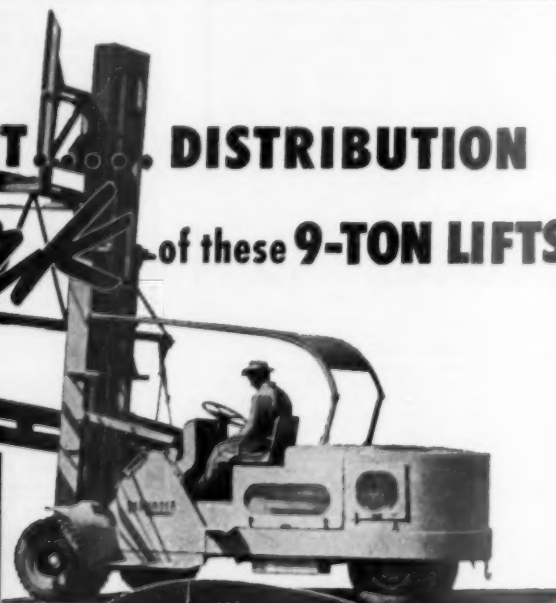
# GERLINGER'S COUNTER-ACTIVE WEIGHT..... DISTRIBUTION Makes *Easy Work* of these 9-TON LIFTS

Seattle Concrete Pipe Co. is manufacturing pre-cast concrete beams that weigh ten tons and are forty feet long. Moving these cumbersome units about the plant proved an easy job for their 9-ton Gerlinger Lift Truck.

Talbot Campbell, president, says: "Our Gerlinger Lift Truck does a very good job for us in the efficient handling of materials in our yard. We have had a very low upkeep expense on this lift truck during the time we have owned it."

The balanced weight distribution of a Gerlinger Lift Truck makes it particularly ideal for such off-size lifts. 34% of the truck's weight is where it's needed —

— over the front wheels — for maximum traction and easy maneuverability. This is just one of the many exclusive job-proven features that enable Gerlinger Lift Trucks to out-perform all others in the most rugged handling jobs.



**GERLINGER**  
CARRIER CO.

G-244

**GERLINGER CARRIER CO. DALLAS, OREGON**



# Another **BESSER** Booster\*

## Australian BLOCK PLANT, in First 12 Months, enjoys 300% INCREASE IN SALES

Jaywoth-Besser, Ltd., Adelaide, So. Australia, is operating Australia's first automatic concrete block machine — a Besser Vibrapac. After less than 12 months' operation, sales of block increased more than 300%. As a result, the company recently placed an order for two more Besser Vibrapacs.

The confidence in Besser equipment dates back to a 1953 Canadian trip made by John Wotherspoon, managing director of Jaywoth. He noticed the extensive use of concrete block and the fact that practically all block plants operated Besser Vibrapacs.

Mr. Wotherspoon was particularly impressed with the high quality block produced by the Vibrapac machines and their lack of "down time". He stated: "I would have less trouble in operating our Vibrapac in such a long distance from the Besser factory. This fact is of major importance to ourselves". The Australian plant is more than 10,000 miles from the Besser plant at Alpena.

Jaywoth-Besser Ltd. is not affiliated in any way with the Besser Company. Mr. Wotherspoon asked for, and received permission, to include Besser in the company name because of the prestige the name carries throughout the Concrete Masonry Industry.

If you want to make money in the block business, make MORE money with BESSER equipment. Write for literature.

**BESSER COMPANY, Box 135, Alpena, Mich.**

*Complete Equipment for Concrete Block Plants*

\* This is the 125th of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.



John Wotherspoon, managing director of Jaywoth-Besser, Ltd., flanked by company executives. Prior to going in the block business, Mr. Wotherspoon was a pilot in the Royal Air Force of Great Britain.



Kilns for curing the green block. Note Time Indicators over each kiln in addition to temperature gauge. Shows time when filled . . . when steam was turned on . . . and when steam was shut off.



Yard scene at the Jaywoth plant. Stock piles are depleted because of the tremendous demand for block in Australia.



Besser simplified method of removing green block from Vibrapac machine. Pneumatic powered hoist does the lifting. Off-bearer guides the power hoist. Vibrapac dependability is of utmost importance because of long distance from the Besser factory.

**BESSER EXHIBITS:** Besser maintains Permanent Concrete Masonry Exhibits at the Architects' Samples Corp., 101 Park Ave., New York City and the new National Housing Center, Washington, D. C.

*First in Concrete Block Machines!*



A 8042-1FBC

# Moving Day

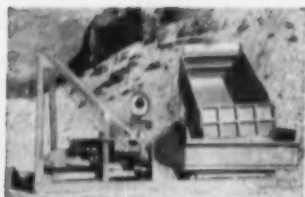
## is no problem with

# TRAVEL BATCHER

TRADEMARK



The hopper can be recharged with either a dump truck or a front-end loader, and can be used with 3-, 4-, or 5-yard mixers.



**MOVING DAY** is no problem with the new on the job **TRAVEL BATCHER**. Instant maneuverability makes the **TRAVEL BATCHER** available for several jobs a day, and its speed of operation results in the production of up to 100 yards per hour.

Batch mixture is maintained uniformly with accurate scales mounted on the machine. By bringing the batch plant closer to the job, it reduces the number of truck mixers needed by as much as 83%.

The **TRAVEL BATCHER** offers the performance of a stationary batch plant, plus the convenience of mobility.

**TRAVEL BATCHERS** are being used by the largest contractors on Bureau of Reclamation projects, Army Air Force, Navy and Marine installations, Atomic Energy projects, Defence Projects in Alaska, Royal Canadian Air Force Stations in Canada, and on many government and state highway projects.



For additional list of users, for more information and letters of recommendation, write, wire or phone . . .

**SOUTHEAST READY-MIX**  
6450 Holladay Blvd. • Salt Lake City, Utah

# ROCK PRODUCTS

## DIRECTORY OF MANUFACTURERS' EQUIPMENT

### 1956

Machinery, equipment and supplies for the Rock Products' Industries are listed alphabetically and the names and addresses of manufacturers indicated.

Advertisers who use ROCK PRODUCTS are identified by a dot (•) preceding the listing.

Numbers under manufacturers' listing identify subdivision in which their equipment falls. See beginning of each classification for code identification.

#### A

##### ABRASIVES

- **CLIPPER MFG. CO.**, 2800 Warwick, Kansas City 8, Mo.
- **PANGBORN CORP.**, Pangborn Blvd., Hagerstown, Md.
- **WHEELABRATOR CORP.**, 1281 S. Byrik St., Miskawaka, Indiana

##### ADMIXTURES, Aggregate

- **CHICAGO FLY ASH CO.**, 228 N. La Salle St., Chicago 1, Ill.
- **EDICK LABORATORIES**, 427 West National Ave., Milwaukee, Wis.
- **A. C. HORN CO., INC.**, 10th St. & 44th Ave., Long Island City 1, N.Y.
- **THE MASTER BUILDERS CO.**, 7016 Euclid Ave., Cleveland 3, Ohio
- **ORONITE CHEMICAL CO.**, 200 Bush St., San Francisco, Calif.
- **REARDON INDUSTRIES, INC.**, 2837 Stanton Ave., Cincinnati 6, Ohio
- **TAMM INDUSTRIES INC.**, 228 N. LaSalle St., Chicago 1, Ill.
- **VAN HOVEN CO., INC.**, 418 Bremer Arcade, St. Paul 1, Minn.

##### AERATION UNIT, for Blending Agitation in Bins

- **THE BIN-DICATOR COMPANY**, 13946 Kercheval Avenue, Detroit 15, Michigan
- **CONCRETE TRANSPORT MIXER CO.**, 4985 Fyler Ave., St. Louis 9, Mo.
- **FULLER CO.**, Catasauqua, Pa.
- **MATERIAL HANDLING INC.**, 4985 Fyler Ave., St. Louis 9, Mo.
- **F. L. SMIDTH & CO.**, 20 W. 43rd St., New York 36, N.Y.

##### AERIAL TRAMWAYS

- **SAUERMAN BROS., INC.**, 620 South 28th Ave., Bellwood, Illinois
- **AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP.**, 614 Superior Ave., N.W., Rockefeller Bldg., Cleveland 13, Ohio
- **COLUMBIA-GENEVA STEEL DIV., UNITED STATES STEEL CORP.**, Equitable Life Bldg., San Francisco, Calif.

##### AFTERCOOLERS, Air

- **CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York, N.Y.
- **JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- **F. L. SMIDTH & CO.**, 20 W. 43rd St., New York, N.Y.
- **R. C. STANHOPE, INC.**, 60 E. 42nd St., New York, N.Y.

##### AGGREGATES, for Concrete, Lightweight Slag, Haydite, Pumice, Perlite, Cinders, etc.

- **AMERICAN BILDROK CO.**, 2001 W. Pershing Rd., Chicago 9, Illinois
- **THE CELOTEX CORP.**, 120 S. La Salle St., Chicago 3, Ill.
- **DULUTH SLAG CO.**, Foot of 59th Avenue West, Duluth 7, Minn.
- **GARY SLAG CORP.**, 542 South Dearborn, Chicago, Illinois
- **GRANULITE CO.**, 605 W. Washington Blvd., Chicago, Illinois
- **GREAT LAKES CARBON CORP.**, Perlite Div., 612 South Flower St., Los Angeles 17, Calif.
- **HARBISON-WALKER REFRAC-TORIES CO.**, 1800 Farmers Bank Bldg., Pittsburgh 22, Pa.
- **THE MARIETTA CONCRETE CORP.**, 1949 Register Ave., Marietta, Ohio
- **R. P. MCMINDES, INC.**, 1143 Penn Ave., Wyomissing, Pa.
- **PUMICE, INC.**, 1820 N. Yellowstone Ave., P.O. Box 517, Idaho Falls, Idaho
- **UNITED STATES STEEL CORP.**, 925 William Penn Place, Pittsburgh 30, Pa.
- **THE WAYLITE CO.**, 20 N. Wacker Drive, Chicago, Ill.
- **ZONOLITE CO.**, 135 S. LaSalle St., Chicago, Illinois

##### AGITATORS (see Vibrators, Portable Concrete)

##### AGITATORS, Slurry (see Slurry Agitators)

##### AIR COMPRESSORS

1. Portable
  2. Stationary
- **ALLIS-CHALMERS MFG. CO.**, 975 S. 70th St., Milwaukee 1, Wisc.
  - **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.
  - **CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York 17, N.Y.
  - **FULLER CO.**, Catasauqua, Pa.
  - **GARDNER-DENVER CO.**, Quincy, Ill.
  - **INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.
  - **THE JAEGER MACHINE CO.**, 550 W. Spring St., Columbus 16, Ohio
  - **JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.

- **LE ROI COMPANY**, 1706 S. 68th St., Milwaukee 14, Wisc.
- **SCHRAMM, INC.**, West Chester, Pa.
- **R. C. STANHOPE, INC.**, 60 E. 42nd St., New York, N.Y.
- **WORTHINGTON CORP.**, 426 Washington Ave., Harrison, N. J.

##### AIR CONDITIONING EQUIPMENT

- **DRAGO CORP.**, Drago Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- **GENERAL ELECTRIC CO.**, 1 River Rd., Schenectady 5, N.Y.
- **INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.
- **INTERNATIONAL HARVESTER CO.**, 180 N. Michigan Ave., Chicago 1, Ill.
- **THE READY-POWER CO.**, 11231 Freud Ave., Detroit 14, Mich.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

##### AIR CONVEYORS (see Conveyors, Air)

##### AIR ENTRAINING AGENTS

- **AUTOLENE LUBRICANTS CO., PROTEX INDUSTRIAL DIV.**, 1331 W. Evans, Denver 9, Ohio
- **DEWEY AND ALMY CHEMICAL CO., DIV. OF W. R. GRACE & CO.**, 62 Whittemore Ave., Cambridge 40, Mass.
- **HERCULES POWDER CO.**, 946 King Street, Wilmington 99, Dela.
- **A. C. HORN CO., INC.**, 10th St. & 44th Ave., Long Island City 1, N.Y.
- **THE MASTER BUILDERS CO.**, 7016 Euclid Ave., Cleveland 3, Ohio
- **MINERAL PIGMENTS CORP.**, Washington Blvd., Muirkirk, Md.
- **NOPCO CHEMICAL CO.**, 15 Essex St., Harrison, N. J.
- **ORONITE CHEMICAL CO.**, 200 Bush St., New York, N. Y.
- **REARDON INDUSTRIES, INC.**, 2837 Stanton Ave., Cincinnati 6, Ohio
- **SERVICISED PRODUCTS CORP.**, 6051 West 65th St., Chicago 38, Ill.
- **VAN HOVEN CO., INC.**, 418 Bremer Arcade, St. Paul 1, Minn.
- **VERISET CORP.**, 150 Nassau St., New York City 38, N.Y.

##### AIR FILTERS

- **AMERICAN AIR FILTER CO., INC.**, 107 Central Ave., Louisville 8, Ky.
- **E. D. BULLARD CO.**, 275 Eighth St., San Francisco 3, Calif.

- **THE GOODYEAR TIRE & RUBBER CO., INC.**, 1144 E. Market St., Akron 16, Ohio
- **INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.
- **MINE SAFETY APPLIANCES CO.**, 201 N. Braddock Ave., Pittsburgh 8, Pa.
- **TURNER & HAWS ENGINEERING CO., INC.**, 87 Gardner St., West Roxbury 32, Mass.
- **VICTOR EQUIPMENT CO.**, 844 Folsom St., San Francisco 7, Calif.
- **WHEELABRATOR CORP.**, 1281 S. Byrik St., Miskawaka, Indiana

##### AIR HEATERS

- **AMERICAN AIR FILTER CO., INC.**, 107 Central Ave., Louisville 8, Ky.

##### AIR LINE LUBRICATORS

- **GARDNER-DENVER CO.**, Quincy, Ill.
- **INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.
- **LINCOLN ENGINEERING CO.**, 5701 Natural Bridge Ave., St. Louis 20, Mo.
- **RUCKER CO.**, 4228 Hollis St., Emeryville, Calif.
- **ALEMITE DIV., STEWART-WARNER CORP.**, 1826 Diversoy Pkway, Chicago 14, Ill.
- **THOR POWER TOOL CO.**, 175 N. State St., Aurora, Ill.
- **VICTOR EQUIPMENT CO.**, 844 Folsom St., San Francisco 7, Calif.
- **WORTHINGTON CORP.**, 426 Washington Ave., Harrison, N. J.

##### AIR RECEIVERS, Tanks, Steel

- **GENERAL AMERICAN TRANSPORTATION CORP.**, 135 S. La Salle St., Chicago 90, Ill.
- **INGERSOLL-RAND CO.**, 11 Broadway, New York, N.Y.
- **JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- **MANITOWOC SHIPBUILDING, INC.**, 16th & River Sts., Manitowac, Wis.

##### AIR SEPARATORS

- **BRADLEY PULVERIZER CO.**, 123 S. Third St., Allentown, Pa.
- **COMBUSTION ENGINEERING, INC., RAYMOND DIV.**, 1315 N. Branch St., Chicago 22, Ill.
- **FULLER CO.**, Catasauqua, Pa.
- **HARDINGE CO., INC.**, 240 Arch St., York, Pa.
- **W. P. HEINEKEN, INC.**, 90 Broad St., New York 3, N.Y.
- **INGERSOLL-RAND CO.**, 11 Broadway, New York, N. Y.
- **M. B. LARGE ENGINEERING CO.**, 262 So. Parkwood Ave., Pasadena, California

• A dot before name indicates ROCK PRODUCTS Advertiser

## DIRECTORY

- REES BLOW PIPE MFG. CO., 340 Seventh St., San Francisco 3, Calif.
- F. L. SMITH & CO., 20 West 43rd St., New York 36, N.Y.
- STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass.
- UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 2701 N. Broadway, St. Louis 6, Mo.

### AIR TRANSPORT SYSTEMS (see Conveyors, Air)

#### ALLOYS

1. Abrasion Resisting
  2. Heat Resisting
  3. Manganese
- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.  
1—2—3
  - AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 289 E. 14th St., Chicago Heights, Ill.  
1—2—3
  - BABCOCK & WILCOX CO., 161 East 42nd St., New York 17, N.Y.  
1—2
  - CALUMET STEEL CASTINGS CORP., 1634 Summer St., Hammond, Ind.  
1—2
  - EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines, Iowa  
1
  - ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 25th Ave., Portland 10, Ore.  
1—2—3
  - THE FAHRALLOY CO., 150th & Lexington Aves., Harvey, Ill.  
1—2
  - HAYNES STELLITE CO., 725 S. Lindsay, Kokomo, Ind.  
1—2
  - KENSINGTON STEEL CO., 505 Kensington Ave., Chicago 28, Ill.  
3
  - JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.  
1—2—3
  - STODDY CO., Whittier, Calif.  
1—2—3
  - STULZ-SICKLES CO., 134 Lafayette St., Newark 3, N.J.  
1—3
  - TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.  
1—3
  - THOMAS FOUNDRIES, INC., 3800 10th Ave., P.O. Box 1117, Birmingham 1, Ala.  
1
  - COLUMBIA-GENEVA STEEL DIV., UNITED STATES STEEL CORP., Equitable Life Bldg., San Francisco 6, Calif.  
1—2—3
  - VICTOR EQUIPMENT CO., 844 Folsom St., San Francisco, Calif.  
1
  - WALL COLIMONHOY CORP., 19345 John R St., Detroit 3, Mich.  
1—2

#### ALTERNATORS, Electric

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wisc.
- ELECTRIC MACHINERY MFG. CO., 800 Central Avenue, Minneapolis 13, Minn.
- GENERAL ELECTRIC CO., 1 River Rd., Schenectady 5, N.Y.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh, Pa.

#### AMMETERS, Electric

- GENERAL ELECTRIC CO., 1 River Rd., Schenectady 5, N.Y.
- ALUMITE DIV., STEWART-WARNER CORP., 1826 Diversy Pkwy., Chicago 14, Ill.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh, Pa.

#### ANTI-FRICTION BEARINGS (see Bearings)

#### APRON FEEDERS (see Feeders, Apron)

#### ARC WELDING APPARATUS (see Welding Machines, Arc)

#### ASPHALTIC CONCRETE Cold Mix—Cold Lay

- A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.
- NATIONAL AMALGA-PAVE, INC., 357 S. Robertson Blvd., Beverly Hills, Calif.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

#### ASPHALT MIXING PLANTS

- BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.
- BLAW-KNOX CO., 2035 Farmers Bank Bldg., Pittsburgh, Pa.
- HETHERINGTON & BERNER, INC., 701 Kentucky Ave., Indianapolis 7, Ind.
- IOWA MFG. CO., 916-16th St., N.E., Cedar Rapids, Iowa
- KWI-MIX COMPANY, Port Washington, Wisc.
- NATIONAL AMALGA-PAVE, INC., 357 S. Robertson Blvd., Beverly Hills, Calif.
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave., N.E., Minneapolis 13, Minn.
- STANDARD STEEL CORP., 5036 Boyle Ave., Los Angeles 58, Calif.
- UNIVERSAL ENGINEERING CORP., 625 C. Ave., N.W., Cedar Rapids, Iowa
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

#### AUTOClaves, Laboratory

- JACKSON & CHURCH CO., 321 N. Hamilton St., Saginaw, Mich.
- RICHMOND ENGINEERING CO., 700 Hospital St., Richmond, Va.
- SHORE ENGINEERING, 322 Broadway, New York 7, N.Y.

#### AXLES, Truck

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- EATON MFG. CO., Axle Div., 739 E. 140th St., Cleveland 10, Ohio
- F. A. B. MANUFACTURING CO., 1249 67th St., Oakland, Calif.
- TIMKIN DETROIT & AXLE DIV., ROCKWELL SPRING & AXLE CO., 100 Clark Ave., Detroit, Mich.
- TRUCK EQUIPMENT CO., 1791 Fillmore, Buffalo, N.Y.
- TRUCKSTELL MFG. CO., 1437 Union Commerce Bldg., Cleveland 14, Ohio

#### AXLES & WHEELS, Car & Locomotive

- UNITED STATES STEEL CORP., 525 William Penn Place, Pittsburgh 30, Pa.

#### B

#### BABBITT METAL (see Bearing Metals)

#### BAG CLEANERS

- THE NORTHERN BLOWER CO., 6409 Barbartown Ave., Cleveland 2, Ohio
- REES BLOW PIPE MFG. CO., 340 Seventh St., San Francisco 3, Calif.

#### BAGGING MACHINES

- BLACK PRODUCTS CO., 13513 Calumet Ave., Chicago 27, Illinois
- E. D. CODDINGTON MFG. CO., 5024 N. 37th Street, Milwaukee 9, Wisconsin
- BAGPAK DIVISION, INTERNATIONAL PAPER COMPANY, 220 East 42nd Street, New York 17, New York
- RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N.J.
- ST. REGIS PAPER CO., 230 Park Ave., New York 17, N.Y.
- UNION BAG & PAPER CORP., 233 Broadway, New York 7, N.Y.
- VREDENBURG DEVELOPMENT CO., 5514 Doyle St., Emeryville, Calif.

#### BAGS, Dust Collector

- AMERICAN AIR FILTER CO., INC., 107 Central Avenue, Louisville 6, Ky.
- THE NORTHERN BLOWER CO., 6409 Barbartown Ave., Cleveland 2, Ohio
- REES BLOW PIPE MFG. CO., 340 Seventh St., San Francisco 3, Calif.
- WHEELABRATOR CORP., 1281 S. Byrkit St., Miskawaka, Indiana

#### BAGS

1. Paper
  2. Cloth
- BENIS BROS. BAG CO., 408-M Pine St., St. Louis 2, Mo.  
1—2
  - CHASE BAG CO., (Gen. Sales Office) 309 W. Jackson Blvd., Chicago 6, Ill.  
1—2
  - CROWN ZELLERBACH, 343 Sansome St., San Francisco, Calif.  
1—2
  - EQUITABLE PAPER BAG CO., 45-50 Van Dam St., Long Island City 1, N.Y.  
1
  - FULTON BAG & COTTON MILLS, 170 Boulevard, S.E., Atlanta, Ga.  
1—2
  - GILMAN PAPER CO., 630 5th Ave., New York 20, N.Y.  
1
  - HAMMOND BAG & PAPER CO., Davis & Lewis Sts., Wellsburg, W. Va.  
1
  - HUDSON PULP & PAPER CORP., 220 East 42nd St., New York 22, N.Y.  
1
  - BAGPAK DIVISION, INTERNATIONAL PAPER COMPANY, 220 East 42nd Street, New York 17, New York  
1
  - KRAFT BAG CORP., 630 Fifth Ave., New York 17, N.Y.  
1
  - RAYMOND BAG CO., 1937 Jackson Blvd., Middletown, Ohio  
1
  - ST. REGIS PAPER CO., 230 Park Ave., New York 17, N.Y.  
1
  - UNION BAG AND PAPER CORP., 233 Broadway, New York 7, N.Y.  
1
  - VIRGINIA-CAROLINA CHEMICAL CORP., 401 E. Main, Richmond 5, Va.  
1

#### BAG TIES, Wire

- THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado
- ST. REGIS PAPER CO., 230 Park Ave., New York 17, N.Y.

#### BALL BEARINGS (see Bearings, Ball)

#### BALL MILLS (see Mills, Ball)

#### BALLS & SLUGS, Grinding (see Grinding Media)

#### BARGES, Sand and Gravel, etc.

- DRAVO CORP., Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa
- MAXON CONSTRUCTION CO., MARINE DIV., Tell City, Ind.
- YUBA MFG. CO., 351 California St., San Francisco 4, Calif.

#### BATCHERS, BIN

1. Weighing
  2. Volumetric
- ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio  
1—2
  - BESSER MFG. COMPANY, Alpena, Mich.  
1—2
  - BLAW-KNOX CO., 2035 Farmers Bank Bldg., Pittsburgh, Pa.  
1
  - BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.  
1—2
  - BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wisc.  
1—2
  - CARRIER CONVEYOR CORP., 2144 Frankfort Avenue, Louisville 6, Ky.  
1
  - CIMCO—CONSTRUCTION-INDUSTRIAL MFG. CO., Box 422, Marshalltown, Iowa
  - COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
1—2
  - CONCRETE EQUIPMENT MFG. CO., 5437 Tweedy, South Gate, Calif.  
1—2
  - CONCRETE TRANSPORT MIXER CO., 4987 Fyler Ave., St. Louis 9, Mo.  
1
  - THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio  
1—2
  - FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.  
1—2
  - FULLER CO., Catasauqua, Pa.  
2
  - THE HOWE SCALE CO., Rutland, Vt.  
1
  - HOWRY-BERG STEEL & IRON WORKS, 1366 W. Oxford, Denver, Colorado
  - THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio  
2
  - C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
1
  - KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.  
1—2
  - LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wisc.  
1
  - MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.  
1
  - MERRICK SCALE MFG. CO., Summer St., Passaic, N.J.  
1
  - NOBLE CO., 1860 7th St., Oakland 20, Calif.  
1
  - RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N.J.  
1
  - ST. REGIS PAPER CO., 230 Park Ave., New York 17, N.Y.  
1
  - SCHAFFER PLODUMETER CO., 28th & Smallman Sts., Pittsburgh, Pa.  
1

• A dot before name indicates ROCK PRODUCTS Advertiser



# DIRECTORY

SCIENTIFIC CONCRETE SERVICE  
CORP., 724 Salem Ave., Elizabeth  
3, N. J.

1  
● SOUTH EAST READY MIX CO.,  
6400 South Holladay Blvd., Salt  
Lake City, Utah

2  
STREETER-AMET CO., 4101 N. Rav-  
enswood Ave., Chicago 13, Ill.

1  
● SYNTRON CO., 450 Lexington  
Ave., Homer City, Pa.

1  
THURMAN MACHINE CO., 254 E.  
Long St., Columbus, Ohio

1  
TRIANGLE ENGINEERING CO.,  
538 Broadway, Chesterton, Indi-  
ana

1-2  
RICHARD P. WALSH CO., 30  
Church St., New York, N.Y.

## BATCHING PLANTS

● BLAW-KNOX CO., 2035 Farmers  
Bank Bldg., Pittsburgh, Pa.  
BODINSON MFG. CO., 2401 Bay-  
shore Blvd., San Francisco 24,  
Calif.

● BUTLER BIN CO., 945 Blackstone  
Ave., Waukesha, Wisc.

● COLUMBIA MACHINE WORKS,  
107 South Grand, Vancouver,  
Washington

● CONCRETE TRANSPORT MIXER  
CO., 4987 Fyler Ave., St. Louis 9,  
Mo.

● COOK BROS. EQUIPMENT CO.,  
3334 San Fernando Road, Los An-  
geles 65, Calif.

THE FAIRFIELD ENGINEERING  
CO., 324 Barnhart St., Marion,  
Ohio

● FANNING SCHUETT ENGINEERING  
CO., 4325 N. Third Street, Phila-  
delphia 40, Pa.

● HOWRY - BERG STEEL & IRON  
WORKS, 1356 W. Oxford, Denver,  
Colorado

● C. S. JOHNSON CO., P. O. Box  
71, Champaign, Ill.

● LIPPMANN ENGINEERING WORKS,  
4603 W. Mitchell St., Milwaukee  
14, Wisc.

● E. F. MARSH ENGINEERING CO.,  
4324 W. Clayton Ave., St. Louis  
10, Missouri

● MATERIAL HANDLING INC., 4985  
Fyler Ave., St. Louis 9, Mo.  
MIXERMOBILE MANUFACTURERS,  
6855 N.E. Halsey St., Portland,  
Ore.

● NOBLE CO., 1860 7th St., Oak-  
land 20, Calif.

● SOUTH EAST READY MIX CO.,  
6540 Holladay Blvd., Salt Lake  
City, Utah

RICHARD P. WALSH CO., 30  
Church St., New York, N.Y.

● AL WILLIS SALES CO., 7100 Eu-  
dora Drive, Denver, Colorado

## BATTERIES, Storage

● THE GOODYEAR TIRE & RUBBER  
CO., INC., 1144 E. Market St.,  
Akron 16, Ohio

● THE MARIETTA CONCRETE CORP.,  
1949 Register Ave., Marietta, Ohio

● UNITED STATES RUBBER CO., 1230  
Ave. of the Americas, New York  
20, N.Y.

## BATTERY CHARGING EQUIPMENT

● GENERAL ELECTRIC CO., 1 River  
Rd., Schenectady 5, N.Y.

GENERAL SCIENTIFIC EQUIPMENT  
CO., 2735 W. Huntingdon St.,  
Philadelphia 32, Pa.

D. W. ONAN & SONS, INC., Uni-  
versity Ave. S. E. at 25th, Min-  
neapolis 14, Minn.

WESTINGHOUSE ELECTRIC CO.,  
Gateway Bldg., Pittsburgh 30, Pa.

## BEARING METALS

● AMERICAN BRAKE SHOE COM-  
PANY, NATIONAL BEARING DI-  
VISION, 4930 Manchester Avenue,  
St. Louis 10, Missouri

● AMERICAN BRAKE SHOE CO., 230  
Park Ave., New York 17, N.Y.

● JOSEPH T. RYERSON & SON, INC.,  
P.O. Box 8000-A, Chicago 80, Ill.

● STOODY CO., Whittier, Calif.

## BEARINGS

1. Ball
2. Roller
3. Thrust
4. Needle

● AMERICAN BRAKE SHOE CO., 230  
Park Ave., New York 17, N.Y.

● CHAIN BELT CO., 4649 W. Green-  
field Ave., Milwaukee 1, Wisc.

● DODGE MFG. CORP., 1952 Wil-  
liam St., Mishawaka, Ind.

● INTERNATIONAL HARVESTER CO.,  
180 N. Michigan Ave., Chicago 1,  
Ill.

● LINK-BELT CO., 307 N. Michigan  
Ave., Chicago 1, Ill.

● REES BLOW PIPE MFG. CO., 340  
Seventh St., San Francisco 3,  
Calif.

● ROLLWAY BEARING CO., INC.,  
541 Seymour St., Syracuse 4, N.Y.

● SHAFER BEARING CORP., 800 Bur-  
lington Ave., Downers Grove, Ill.

● K F INDUSTRIES, INC., Front  
St. & Erie Ave., Philadelphia 32,  
Pa.

● STEPHENS-ADAMSON MFG. CO.,  
Ridgeway Ave., Aurora, Ill.

● THE TIMKEN ROLLER BEARING  
CO., Canton 6, Ohio

● THE TORRINGTON CO., Torrington,  
Conn.

● THE TORRINGTON CO., BANTAM  
BEARINGS DIV., 3702 W. Sample  
St., South Bend 21, Ind.

## BELT ALIGNERS

● BARBER-GREENE CO., 400 N.  
Highland Ave., Aurora, Ill.

BONDED SCALE & MACHINE CO.,  
2176 S. Third St., Columbus, Ohio

● CHAIN BELT CO., 4649 W. Green-  
field Ave., Milwaukee 1, Wisc.

● CONTINENTAL GIN CO., 4500 5th  
Ave. S., Birmingham, Ala.

● FANNING SCHUETT ENGINEERING  
CO., 4325 N. Third Street, Phila-  
delphia 40, Pa.

● JEFFREY MANUFACTURING CO.,  
935 North 4th St., Columbus,  
Ohio

● LINK-BELT COMPANY, 307 N.  
Michigan Ave., Chicago 1, Ill.

● LIPPMANN ENGINEERING WORKS,  
4603 W. Mitchell St., Milwaukee  
14, Wisc.

● MECKUM ENGINEERING, INC.,  
Dayton Road, Ottawa, Ill.

● UNIVERSAL ENGINEERING CORP.,  
625 C. Ave. N.W., Cedar Rapids,  
Iowa

● WEBSTER MFG. CO., 1100 W.  
Davis St., Tiffin, Ohio

## BELT CONVEYORS AND ACCESSORIES (see Con- veyors, Belt)

## BELT CUTTERS

● ARMSTRONG-BRAY & COMPANY,  
5366 Northwest Highway, Chicago  
30, Illinois

● FLEXIBLE STEEL LACING CO.,  
4607 Lexington St., Chicago 44,  
Ill.

## BELT FASTENERS AND LACING

● ARMSTRONG-BRAY & COMPANY,  
5366 Northwest Highway, Chicago  
30, Illinois

● CARLYLE RUBBER CO., INC., 62  
Park Place, New York 7, N.Y.

● FLEXIBLE STEEL LACING CO.,  
4607 Lexington St., Chicago 44,  
Ill.

THREE POINT BELT LACING CO.,  
P. O. Box 389, Peace Dale, R.I.

## BELT PULLEYS (see Pul- leys, Conveyors, etc.)

## BELT TRIPPERS (see Con- veyor Belt Trippers)

## BELTING Chain

● CHAIN BELT COMPANY, 4649 W.  
Greenfield Ave., Milwaukee 1,  
Wisc.

THE FAIRFIELD ENGINEERING  
CO., 324 Barnhart St., Marion,  
Ohio

● LINK-BELT COMPANY, 307 N.  
Michigan Ave., Chicago 1, Ill.

TAYLOR-WHARTON IRON & STEEL  
CO., High Bridge, N. J.

## BELTING, Heat Resistant

THE AMERICAN RUBBER MFG.  
CO., 1145 Park Avenue, Oakland  
8, Calif.

● CARLYLE RUBBER CO., INC., 62  
Park Place, New York 7, N.Y.

● GOODALL RUBBER CO., 403  
Whitehead Road, Trenton 4, N. J.

● B. F. GOODRICH CO., 500 South  
Main St., Akron 11, Ohio

● HEWITT-ROBINS, INC., 666 Glen-  
brook Road, Stamford, Conn.

● QUAKER RUBBER CORP., DIV. OF  
H. K. PORTER CO., INC., OF  
PITTSBURGH, Tacony & Comly  
Sts., Philadelphia 24, Pa.

● RAYBESTOS-MANHATTAN, INC.,  
MANHATTAN RUBBER DIV., 92  
Townsend St., Passaic, N. J.

## BELTING, Rubber

1. Conveyor
2. Bucket Elevator
3. Power Transmission

THE AMERICAN RUBBER MFG.  
CO., 1145 Park Avenue, Oakland  
8, Calif.

● BARBER-GREENE CO., 400 N.  
Highland Ave., Aurora, Ill.

BONDED SCALE & MACHINE CO.,  
2176 S. Third St., Columbus, Ohio

● BOSTON WOVEN HOSE & RUB-  
BER COMPANY, P.O. Box 1071,  
Boston 3, Massachusetts

● CARLYLE RUBBER CO., INC., 62  
Park Place, New York 7, N.Y.

● DURKEE-ATWOOD CO., 215 N.E.  
7th St., Minneapolis 13, Minn.

● J. B. ENRSAM & SONS MFG. CO.,  
Enterprise, Kansas

● FIRESTONE TIRE & RUBBER CO.,  
Akron, Ohio

● GOODALL RUBBER CO., 403  
Whitehead Road, Trenton 4, N. J.

● B. F. GOODRICH CO., 500 South  
Main St., Akron 11, Ohio

● THE GOODYEAR TIRE & RUBBER  
CO., INC., 1144 E. Market St.,  
Akron 16, Ohio

1-2-3

E. D. MEENS & SONS, 1301 N.  
Hollywood St., Memphis 8, Tenn.

● HEWITT-ROBINS, INC., 666 Glen-  
brook Road, Stamford, Conn.

E. F. HOUGHTON & CO., 303 W.  
Lehigh Ave., Philadelphia 33, Pa.

● REPUBLIC RUBBER DIV., LEE RUB-  
BER & TIRE CORP., Albert Street,  
Youngstown 1, Ohio

● LINK-BELT COMPANY, 307 N.  
Michigan Ave., Chicago 1, Ill.

● MANHEIM MFG. & BELTING CO.,  
Manheim, Pennsylvania

● PIONEER RUBBER MILLS, 520  
Fourth St., San Francisco 11, Calif.

● QUAKER RUBBER CORP., DIV. OF  
H. K. PORTER CO., INC., OF  
PITTSBURGH, Tacony & Comly  
Sts., Philadelphia 24, Pa.

● RAYBESTOS-MANHATTAN, INC.,  
MANHATTAN RUBBER DIV., 92  
Townsend St., Passaic, N. J.

● THERMOID CO., 200 Whitehead  
Rd., Trenton, N. J.

● UNITED STATES RUBBER CO.,  
1230 Ave. of the Americas, New  
York 20, N.Y.

1-2-3

## BELTING, V-Type

● ALLIS-CHALMERS MFG. CO., 975  
So. 70th St., Milwaukee 1, Wisc.

● THE AMERICAN PULLEY CO., 4200  
Wissahickon Ave., Philadelphia  
29, Pa.

BOSTON WOVEN HOSE & RUB-  
BER COMPANY, P.O. Box 1071,  
Boston 3, Massachusetts

● CARLYLE RUBBER CO., INC., 62  
Park Place, New York 7, N.Y.

● DODGE MFG. CORP., 1952 Wil-  
liam St., Mishawaka, Ind.

● DURKEE-ATWOOD CO., 215 N.E.  
7th St., Minneapolis 13, Minn.

● FLEXIBLE STEEL LACING CO.,  
4607 Lexington St., Chicago 44,  
Ill.

● GATES RUBBER CO., 999 S. Broad-  
way, Denver, Colorado

● B. F. GOODRICH CO., 500 South  
Main St., Akron 11, Ohio

● THE GOODYEAR TIRE & RUBBER  
CO., INC., 1144 E. Market St.,  
Akron 16, Ohio

REPUBLIC RUBBER DIV., Lee Rub-  
ber & Tire Corp., Albert Street,  
Youngstown 1, Ohio

● LINK-BELT COMPANY, 307 N.  
Michigan Ave., Chicago 1, Ill.

● MANHEIM MFG. & BELTING CO.,  
Manheim, Pa.

● QUAKER RUBBER CORP., DIV. OF  
H. K. PORTER CO., INC., OF  
PITTSBURGH, Tacony & Comly  
Sts., Philadelphia 24, Pa.

● RAYBESTOS DIV., RAYBESTOS-  
MANHATTAN RUBBER DIV., 92  
Townsend St., Passaic, N. J.

REPUBLIC RUBBER DIV., LEE  
RUBBER & TIRE CORP., Albert St.,  
Youngstown, Ohio

● THERMOID CO., 200 Whitehead  
Rd., Trenton, N. J.

● UNITED STATES RUBBER CO., 1230  
Ave. of the Americas, New York  
20, N.Y.

## BELTING, Wire

● THE COLORADO FUEL AND IRON  
CORP., Continental Oil Building,  
Denver 2, Colorado

● QUINN WIRE & IRON WORKS,  
Boone, Iowa

## BENDING ROLLS, Rein- forcing Steel

HOUSTON CONCRETE PIPE CO.,  
6600 Washington Ave., P.O. Box  
7767, Houston 7, Texas

● A dot before name indicates ROCK PRODUCTS Advertiser

# DIRECTORY

KLINGELHOFER MACHINE TOOL CO., 103 Lafayette St., Kenilworth, N. J.  
 • GUINN WIRE & IRON WORKS, Boone, Iowa

## BIN AERATORS, Pneumatic

• THE BIN-DICATOR COMPANY, 13946 Kercheval Avenue, Detroit 13, Michigan  
 • COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
 • CONCRETE TRANSPORT MIXER CO., 4985 Fyler Ave., St. Louis 9, Mo.  
 • FULLER CO., Cotosauqua, Pa.  
 • C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
 • MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.  
 • F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.  
 ST. REGIS PAPER CO., 230 Park Ave., New York 17, N.Y.

## BIN GATES

BEAUMONT BIRCH CO., 1505 Race St., Philadelphia 2, Pa.  
 • BLAW-KNOX CO., 2035 Farmers Bank Bldg., Pittsburgh, Pa.  
 BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.  
 • BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wisc.  
 • CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.  
 • COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
 • CONCRETE TRANSPORT MIXER CO., 4987 Fyler Ave., St. Louis 9, Mo.  
 • CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.  
 • DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 4838 S. Halsted, Chicago, Illinois  
 THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio  
 • FANNING SCHUETT ENGINEERING CO., 4325 N. Third St., Philadelphia 40, Pa.  
 • FULLER CO., Cotosauqua, Pa.  
 • HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.  
 HOWRY-BERG STEEL & IRON WORKS, 1366 W. Oxford, Denver, Colorado  
 • IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa  
 • THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio  
 • C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
 • LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wisc.  
 • LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.  
 E. F. MARSH ENGR. CO., 4324 W. Clayton Ave., St. Louis 10, Mo.  
 • MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.  
 • McLANAHAN & STONE CORP., Wall & Jackson Sts., Hollidaysburg, Pa.  
 • MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Ill.  
 • THE NEFF & FRY COMPANY, 150 Thomas St., Camden, Ohio  
 • PIONEER ENGINEERING WORKS, INC., 1315 Central Ave. N.E., Minneapolis 13, Minn.  
 • RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N. J.  
 • SMITH ENGINEERING WORKS, 532 East Capitol Dr., Milwaukee 12, Wis.  
 • THE STANDARD METAL MFG. CO., Malinta, Ohio  
 • STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.

STRAUB MFG. CO., INC., 8383 Baldwin, Oakland, Calif.  
 • WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio

## BIN LEVEL INDICATORS

• THE BIN-DICATOR COMPANY, 13946 Kercheval Ave., Detroit 15, Michigan  
 • BLAW-KNOX CO., 2035 Farmers Bank Bldg., Pittsburgh, Pa.  
 • BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wisc.  
 • COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
 • CONCRETE TRANSPORT MIXER CO., 4987 Fyler Ave., St. Louis 9, Mo.  
 THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio  
 • FULLER CO., Cotosauqua, Pa.  
 • IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa  
 • THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio  
 • C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
 • LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wisc.  
 • MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.  
 • RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N. J.  
 • F. L. SMITH & CO., 20 West 43rd St., New York 36, N.Y.  
 • STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.  
 • SYNTRON COMPANY, 450 Lexington Ave., Hamer City, Pa.

## BINS AND BATCHING EQUIPMENT

• BALDWIN - LIMA - HAMILTON CORP., CRUSHER SALES DIV., Lima, Ohio  
 • BLAW-KNOX CO., 2035 Farmers Bank Bldg., Pittsburgh, Pa.  
 BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.  
 THE BRANFORD COMPANY, 145 Chestnut Street, New Haven, Conn.  
 • L. BURMEISTER CO., 4535 W. Mitchell St., Milwaukee 14, Wisc.  
 • BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wisc.  
 • COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
 • CONCRETE TRANSPORT MIXER CO., 4987 Fyler Ave., St. Louis 9, Mo.  
 • CONTINENTAL GIN CO., 4500 5th Ave. South, Birmingham, Ala.  
 • EAGLE CRUSHER CO., 1000 Harding Way, Galien, Ohio  
 • J. B. EHRMAN & SONS MFG. CO., Enterprise, Kansas  
 THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio  
 • FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.  
 HOWRY-BERG STEEL & IRON WORKS, 1366 W. Oxford, Denver, Colorado  
 • IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa  
 • C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
 • KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.  
 • LIPPERT BIN CO., 2983 Beulah Road, Columbus, Ohio  
 • LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wisc.  
 • THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio  
 • MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.

• THE NEFF & FRY COMPANY, 150 Thomas St., Camden, Ohio  
 • MOBLE CO., 1860-7th St., Oakland 20, Calif.  
 • RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N. J.  
 • SOUTH EAST READY MIX CO., 4400 South Holliday Blvd., Salt Lake City, Utah  
 • STURTEVANT MILL CO., 102 Clayton St., Dorchester, Boston 22, Mass.  
 RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

## BINS, STORAGE: CONCRETE (MONOLITHIC)

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
 • FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.  
 • IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa  
 • C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
 THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

## BIN, STORAGE: CONCRETE (PRECAST)

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
 • CONCRETE TRANSPORT MIXER CO., 4985 Fyler Ave., St. Louis 9, Mo.  
 THE DODSON MFG. CO., INC., 1463 Barwise Ave., Wichita 2, Kan.  
 • FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.  
 • C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
 • THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio  
 • MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.  
 • NEFF & FRY CO., 150 Thomas St., Camden, Ohio  
 RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

## BINS, STORAGE: STEEL

• BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio  
 • BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.  
 BETHLEHEM STEEL CO., Third Street, Bethlehem, Pa.  
 • BLAW-KNOX CO., 2035 Farmers Bank Bldg., Pittsburgh, Pa.  
 BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.  
 • BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wisc.  
 • COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
 • CONCRETE TRANSPORT MIXER CO., 4985 Fyler Ave., St. Louis 9, Mo.  
 • CONTINENTAL GIN CO., 4500 5th Ave. South, Birmingham, Ala.  
 • DIAMOND IRON WORKS, DIV. GOODMAN MANUFACTURING CO., 4838 S. Halsted, Chicago, Illinois  
 • EAGLE CRUSHER CO., INC., 1000 Harding Way, Galien, Ohio  
 THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio  
 • FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.  
 GENERAL AMERICAN TRANSPORTATION CORP., 135 S. La Salle St., Chicago 90, Ill.

• GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.  
 W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.  
 • HELTZEL STEEL FORM & IRON CO., 1750 Thomas Road, Warren, Ohio  
 • HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.  
 HOWRY-BERG STEEL & IRON WORKS, 1366 W. Oxford, Denver, Colorado  
 • IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa  
 • C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
 • THE KIRK & BLUM MFG. CO., 3120 Farrar St., Cincinnati 9, Ohio  
 E. F. MARSH ENGR. CO., 4324 W. Clayton Ave., St. Louis 10, Mo.  
 • MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.  
 • MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Ill.  
 • PIONEER ENGINEERING WORKS, INC., 1315 Central Ave. N.E., Minneapolis 13, Minn.  
 • RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N. J.  
 • SMITH ENGINEERING WORKS, 532 E. Capitol Dr., Milwaukee 12, Wis.  
 SPROUT WALDRON & CO., INC., Muncy, Pa.  
 • THE STANDARD METAL MFG. CO., 110 Center St., Malinta, Ohio  
 TRACTOR & EQUIPMENT CO., 10000 S. Ridgeland Ave., Oak Lawn, Ill.  
 • UNIVERSAL ENGINEERING CORP., 625 C. Ave. N.W., Cedar Rapids, Iowa  
 • UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.  
 RICHARD P. WALSH CO., 30 Church St., New York, N.Y.  
 • WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo.

## BITS, Carbide Drill

BRUNNER & LAY, INC., 9300 King Street, Franklin Park, Ill.  
 • GARDNER-DENVER CO., Quincy, Ill.  
 INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.  
 • JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
 E. J. LONGYEAR CO., 1700 Fashion Tower, Minneapolis 2, Minn.  
 LOOMIS MACHINE CO., Tiffin, Ohio  
 THE SALEM TOOL CO., 767 S. Ellsworth Ave., Salem, Ohio  
 STAR EXPANSION PRODUCTS CO., INC., 147 Cedar St., New York 6, N.Y.  
 THROWAWAY BIT CORP., 4200 N.W. Yeon Ave., Portland 10, Ore.

## BITS, Diamond

PENNSYLVANIA DRILLING CO., 1201 Chartiers Ave., Pittsburgh 20, Pa.

## BITS, Diamond Drilling

• SPRAQUE & HENWOOD, INC., 221 W. Olive St., Scranton 2, Pa.

## BITS, Drill

BRUNNER & LAY, INC., 9300 King Street, Franklin Park, Ill.  
 • BUCYRUS-ERIE CO., South Milwaukee, Wisc.  
 • CHICAGO PNEUMATIC TOOL CO., 6 E. 44th St., New York 17, N.Y.  
 • GARDNER-DENVER CO., Quincy, Ill.  
 HUGHES TOOL CO., 5425 Polk St., Houston, Texas  
 INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.  
 • JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

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## DIRECTORY

- E. J. LONGYEAR CO., 1700 Foshey Tower, Minneapolis 2, Minn.  
**SANDERSON CYCLONE DRILL CO.**, 157 S. Main St., Orrville, Ohio  
**SCHRAMM, INC.**, West Chester, Pa.  
**SPANG & COMPANY**, 143 Etna St., Butler, Pa.  
**THROWAWAY BIT CORP.**, 4200 N.W. Yeon Ave., Portland 10, Ore.  
**TIMKEN ROLLER BEARING CO.**, Canton, Ohio  
**VAREL TOOL CO.**, 9230 Denton Drive, Dallas, Texas

### BITS, Drill, Detachable

- BRUNNER & LAY, INC.**, 9300 King Street, Franklin Park, Ill.  
**GARDNER-DENVER CO.**, Quincy, Ill.  
**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
**JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
**LOOMIS MACHINE CO.**, Tiffin, Ohio  
**SCHRAMM, INC.**, West Chester, Pa.  
**THROWAWAY BIT CORP.**, 4200 N.W. Yeon Ave., Portland 10, Ore.

### BITS, Drill, Grinders

- INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
**THE MINE & SMELTER SUPPLY CO.**, 17th & Blake, Denver 17, Colo.

### BLACKSMITH TOOLS

- CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York 17, N.Y.

### BLASTING MACHINES

- AMERICAN CYANAMID CO.**, Explosives Department, 30 Rockefeller Plaza, New York 20, N.Y.  
**ATLAS POWDER COMPANY**, Wilmington 9, Delaware  
**E. I. DU PONT DE NEMOURS & CO., INC.**, 11502 Nemours Building, Wilmington 98, Del.  
**HERCULES POWDER CO.**, 946 King St., Wilmington 99, Del.  
**ILLINOIS POWDER MFG. CO.**, 306 Olive St., St. Louis 16, Mo.  
**THE KING POWDER CO., INC.**, P.O. Box 974, Cincinnati 1, Ohio  
**TROJAN POWDER CO.**, 17-N 7th St., Allentown, Pa.

### BLASTING SUPPLIES

- AMERICAN CYANAMID CO.**, Explosives Department, 30 Rockefeller Plaza, New York 20, N.Y.  
**ATLAS POWDER COMPANY**, Wilmington 99, Delaware  
**E. I. DU PONT DE NEMOURS & CO., INC.**, 11502 Nemours Bldg., Wilmington 98, Del.  
**THE ENSIGN-BICKFORD COMPANY**, Simsbury, Conn.  
**HERCULES POWDER CO.**, 946 King St., Wilmington 99, Del.  
**ILLINOIS POWDER MFG. CO.**, 306 Olive St., St. Louis 16, Mo.  
**THE KING POWDER CO., INC.**, P.O. Box 974, Cincinnati 1, Ohio  
**TROJAN POWDER CO.**, 17-N 7th St., Allentown, Pa.  
**VICTOR EQUIPMENT CO.**, 844 Folsom St., San Francisco 7, Calif.

### BLOCK MACHINES, Concrete Building

1. Tamping
  2. Vibrating
- ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio  
**J. W. APPLEBY & SON, INC.**, 831 9th St. North, St. Petersburg 2, Fla.  
**2**

- BERGEN MACHINE & TOOL CO., INC.**, 189 Franklin Avenue, Nutley 10, New Jersey  
**2**

- BESSER MFG. CO.**, Alpena, Mich.  
**1-2**

- COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington  
**1-2**

- CONCRETE EQUIPMENT CO.**, 544 Ottawa Ave., Holland, Mich.

- CONCRETE MACHINERY CO., P.O. Drawer 60**, Hickory, Mo. Car.  
**1**

- CONCRETE PRODUCTS, INC.**, Suite 204, 1930 Wilshire Blvd., Los Angeles, California

- CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.  
**2**

- DES PLAINES CONCRETE PROD. MACHINERY**, 930 North Ave., Des Plaines, Ill.  
**1-2**

- W. E. DUNN MANUFACTURING CO.**, 24th & Ottawa Ave., Holland, Mich.  
**1**

- FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.  
**1-2**

- GENERAL ENGINES CO., INC.**, 307 Hunter St., Gloucester City, N. J.  
**2**

- F. C. GEORGE MACHINE CO., INC.**, 100 S. Westmoreland Drive, Orlando, Fla.  
**1-2**

- HOLLAND MACHINERY CO.**, 52 West Fourth St., Holland, Michigan  
**HYDROBLOC, INC.**, 269 West 11th St., Holland, Mich.  
**1-2**

- KENT MACHINE CO.**, Cuyahoga Falls, Ohio  
**1**

- LITH-I-BAR CO.**, Holland, Mich.  
**2**

- MULTIPLEX MACHINERY CO., DIV. OF MULTIPACK, INC.**, Fremont St., Elmore, Ohio  
**1-2**

- THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.  
**1-2**

- PRASCHAK MACHINE CO.**, Marshfield, Wis.  
**2**

- STEARNS MFG. CO., INC.**, 600 E. Beecher, Adrian, Mich.  
**2**

- TRUAX MACHINE & TOOL CO.**, 16 Michigan St., Seattle 8, Wash.  
**1-2**

- WITTELMANN MACHINERY CO.**, Farmingdale, N. J.  
**1-2**

- JOHN J. YELLEN**, Perth Amboy, N. J.

### BLOCK MACHINES ACCESSORIES

- BERGEN MACHINE & TOOL CO., INC.**, 189 Franklin Avenue, Nutley 10, New Jersey  
**BESSER MFG. CO.**, Alpena, Mich.  
**THE BRANFORD COMPANY**, 145 Chestnut Street, New Haven, Conn.  
**COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington  
**CONCRETE EQUIPMENT CO.**, 544 Ottawa Ave., Holland, Mich.  
**CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.  
**LITH-I-BAR CO.**, Holland, Mich.  
**M & M ENGR. CORP.**, 1017 W. 23rd St., Indianapolis 23, Ind.  
**MULTIPLEX MACHINERY CO., DIV. OF MULTIPACK, INC.**, Fremont St., Elmore, Ohio  
**THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.  
**TRUAX MACHINE & TOOL CO.**, 16 Michigan St., Seattle 8, Wash.

### BLOCKS, Pillow, Ball and Roller Bearing

- ROBINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.  
**CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wis.  
**CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.  
**DODGE MFG. CORP.**, 1952 William St., Mishawaka, Ind.  
**HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn.  
**THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio  
**W. A. JONES FOUNDRY & MACHINE CO.**, 4401 Roosevelt Road, Chicago 24, Ill.  
**LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.  
**S K F INDUSTRIES, INC.**, Front St. & Erie Ave., Philadelphia 32, Pa.  
**STEPHENS-ADAMSON MFG. CO.**, 275 Ridgeway Ave., Aurora, Ill.  
**WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio

### BLOCKS, REFRACTORY, (see Refractories)

### BLOCKS, Sheave and Chain

- AMERICAN HOIST AND DERRICK COMPANY**, 63 South Robert St., St. Paul 1, Minnesota  
**MADESCO TACKLE BLOCK CO.**, P. O. Box 148, Easton, Pa.  
**SAUERMAN BROS. INC.**, 620 South 28th Ave., Bellwood, Illinois

### BLOCK SPLITTERS

- BESSER MANUFACTURING COMPANY**, Alpena, Mich.  
**COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington  
**CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.  
**DES PLAINES CONCRETE PROD. MACHINERY**, 930 North Ave., Des Plaines, Ill.  
**ROY DARDEN INDUSTRIES, INC.**, P.O. Box 95, Northside Branch, Atlanta, Georgia  
**FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.  
**LITH-I-BAR CO.**, Holland, Mich.  
**GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.  
**TRUAX MACHINE CO.**, 16 Michigan Ave., Seattle, Wash.

### BLOWERS (see Fans and Blowers)

### BLOW TORCHES, Heaters, Thawing Outfits for Frozen Aggregates

- HAUCK MANUFACTURING COMPANY**, 124-136 Tenth Street, Brooklyn 15, New York  
**LITTLEFORD BROS., INC.**, 453 E. Pearl St., Cincinnati 2, Ohio

### BOATS, Derricks, Tow

- DRAVO CORP.**, Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.  
**MAXON CONSTRUCTION CO., MARINE DIVISION**, Tell City, Ind.

### BOATS, Self-Unloading

- HEWITT-ROBINS INC.**, 666 Glenbrook Road, Stamford, Conn.  
**MANITOWOC SHIPBUILDING, INC.**, 16th & River Sts., Manitowoc, Wis.

### BODIES, Ready Mixed Concrete

1. Transit Mixed
  2. Non-Agitator
- ADAMS DIVISION—LETOURNEAU-WESTINGHOUSE CORP.**, Indianapolis, Indiana  
**BLAW-KNOX CO.**, 2035 Farmers Bank Bldg., Pittsburgh, Pa.  
**1-2**  
**CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wis.  
**CONCRETE EQUIPMENT MFG. CO.**, 5437 Tweedy Blvd., South Gate, Calif.  
**1**  
**CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.  
**1**  
**CONSERCO CO.**, River Road & B&O RR, Washington 16, D.C.  
**1**  
**COOK BROS. EQUIPMENT CO.**, 3334 San Fernando Road, Los Angeles 65, Calif.  
**1**  
**HERCULES STEEL PROD. CORP.**, Sherman Street, Galien, Ohio  
**1**  
**IMPERIAL CONSTRUCTION EQUIPMENT CO.**, 3400 Lake St., Melrose Park, Ill.  
**1**  
**THE JAEGER MACHINE CO.**, 590 W. Spring St., Columbus 16, Ohio  
**1**  
**LEROI CO.**, 1706 S. 68th St., Milwaukee 14, Wis.  
**1**  
**MAXON CONSTRUCTION CO., INC., MFG. DIV.**, 131 N. Ludlow St., Dayton 2, Ohio  
**2**  
**OSHKOSH MOTOR TRUCK, INC.**, Oshkosh, Wisconsin  
**THE T. L. SMITH CO.**, 2835 N. 32nd St., Milwaukee 10, Wis.  
**1**  
**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.  
**1-2**  
**WILLARD CONCRETE MACHINERY CO., LTD.**, 11700 Wright Rd., Lynwood, Calif.  
**1-2**  
**WORTHINGTON CORP.**, 426 Washington Ave., Harrison, N. J.  
**1-2**
- ### BODIES, Detachable Concrete Truck
- WILLARD CONCRETE MACHINERY CO., LTD.**, 11700 Wright Rd., Lynwood, Calif.
- ### BODIES, Dump, Dump Truck
- COVERTO MANUFACTURING CO.**, Cambridge City, Ind.  
**COOK BROS. EQUIPMENT CO.**, 3334 San Fernando Road, Los Angeles 65, Calif.  
**EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.  
**FRUEHAUF-HOBBS DIV., FRUEHOFF TRAILER CO.**, 609-33 N. Main, Fort Worth, Texas  
**THE GALLION ALLSTEEL BODY CO.**, 605 S. Market St., Galien, Ohio  
**GAR WOOD IND., INC.**, Wayne Division, Wayne, Mich., and Richmond, California  
**THE HEIL COMPANY**, 3000 W. Montana St., Milwaukee 1, Wis.  
**HERCULES STEEL PROD. CORP.**, Sherman Street, Galien, Ohio  
**KOEHRING CO.**, 3026 W. Concordia Ave., Milwaukee 16, Wis.  
**THE MARION METAL PROD. CO.**, Cheney Avenue, Marion, Ohio  
**NATIONAL LIFT CO.**, 800 Lowell St., Ypsilanti, Mich.  
**ST. PAUL HYDRAULIC HOIST**, 2207 University Ave., Minneapolis 14, Minn.

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# DIRECTORY

## BODIES, Trailer

- **BAUGHMAN MFG. CO., INC.**, Shipman Road, Jerseyville, Ill.
- **COOK BROS. EQUIPMENT CO.**, 3334 San Fernando Road, Los Angeles 65, Calif.
- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.
- **THE FRUEHAUF TRAILER CO.**, 10940 Harper Ave., Detroit 32, Mich.
- **THE GALION ALLSTEEL BODY CO.**, 605 S. Market Street, Galion, Ohio
- **GAR WOOD IND., INC.**, Wayne Division, Wayne, Mich., and Richmond, California
- **LANDIS STEEL CO.**, 116 West A St., P.O. Box 248, Picher, Okla.
- **ST. PAUL HYDRAULIC HOIST**, 2207 University Ave., Minneapolis 14, Minn.

## BODIES, Trailer, Bulk Cement

- **BAUGHMAN MFG. CO., INC.**, Shipman Road, Jerseyville, Ill.
- **CENCO INDUSTRIES, INC.**, Galion, Ohio
- **COOK BROS. EQUIPMENT CO.**, 3334 San Fernando Road, Los Angeles 65, Calif.
- **THE FRUEHAUF TRAILER CO.**, 10940 Harper Ave., Detroit 32, Mich.
- **HERCULES STEEL PROD. CORP.**, Sherman St., Galion, Ohio
- **HIGHWAY EQUIPMENT CO., INC.**, 623 D Ave. N.W., Cedar Rapids, Iowa
- **LANDIS STEEL CO.**, 116 West A St., P.O. Box 248, Picher, Okla.

## BODIES, Truck, Concrete Block Self-unloading

- **WM. BROS. BOILER & MFG. CO.**, 1037 10th Ave. S.E., Minneapolis 14, Minn.
- **BUILDERS EQUIPMENT COMPANY**, 4012 N. Central Avenue, Phoenix, Arizona
- **DEMPSTER BROS. INC.**, Springdale Ave., Knoxville 17, Tenn.
- **MACK TRUCK, INC.**, 350 Fifth Ave., New York, N.Y.
- **NATIONAL LIFT CO.**, 800 Lowell St., Ypsilanti, Mich.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.
- **WILLARD CONCRETE MACHINERY CO., LTD.**, 11700 Wright Rd., Lynwood, Calif.

## BOILER ACCESSORIES

- **BURKHART ENGINEERING ASSOCIATES**, 30 Huntington Avenue, Boston, Mass.

## BOILER FEED WATER SYSTEMS

- **BAILEY METER CO.**, 1050 Ivanhoe Rd., Cleveland 10, Ohio

## BOILER INSULATION

- **JOHNS-MANVILLE**, 22 E. 40th St., New York 16, N.Y.
- **PLIBRICO CO.**, 1800 N. Kingsbury St., Chicago 14, Illinois

## BOILER TUBES

- **THE BABCOCK & WILCOX CO.**, 161 W. 42nd St., New York 17, N.Y.
- **WM. BROS. BOILER & MFG. CO.**, 1037 10th Ave. S.E., Minneapolis 14, Minn.

## BOILERS

- **THE BABCOCK & WILCOX CO.**, 161 W. 42nd St., New York 17, N.Y.

- **WM. BROS. BOILER & MFG. CO.**, 1037 10th Ave. S.E., Minneapolis 14, Minn.
- **BURKHART ENGINEERING ASSOCIATES**, 30 Huntington Avenue, Boston, Mass.
- **CLEAVER-BROOKS CO.**, 326 E. Keefe Ave., Milwaukee 12, Wisc.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **LITTLEFORD BROTHERS**, 433 East Pearl St., Cincinnati, Ohio
- **SHORE ENGINEERING**, 322 Broadway, New York 7, N.Y.
- **STORM, INC.**, 845-92nd Ave., Oakland 3, Calif.

## BOILERS, Waste Heat

- **THE BABCOCK & WILCOX CO.**, 161 W. 42nd St., New York 17, N.Y.
- **CLEAVER-BROOKS CO.**, 326 E. Keefe Ave., Milwaukee 12, Wisc.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.

## BOOSTERS, Voltage, Motor Generator

- **GENERAL ELECTRIC CO.**, 1 River Rd., Schenectady 3, N.Y.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## BRAKE LINING

- **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.
- **JOHNS-MANVILLE**, 22 E. 40th St., New York 16, N.Y.
- **RAYBESTOS DIV., RAYBESTOS-MANHATTAN, INC.**, 75 E. Main St., Stratford, Conn.
- **RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV.**, 92 Townsend St., Passaic, N. J.
- **THERMOID CO.**, 200 Whitehead Rd., Trenton, N. J.

## BRAKES

1. Clutch
  2. Hydraulic
  3. Magnetic
- **DYNAMATIC CORP.**, 3307 14th Ave., Kenosha, Wis.
  - **GENERAL ELECTRIC CO.**, 1 River Rd., Schenectady 3, N.Y.
  - **THE GOODYEAR TIRE & RUBBER CO., INC.**, 1144 E. Market St., Akron 16, Ohio
  - **STEARNS MAGNETIC INC.**, 675 S. 28th St., Milwaukee 46, Wis.
  - **TIMKIN DETROIT & AXLE DIV., ROCKWELL SPRING & AXLE CO.**, 100 Clark Ave., Detroit, Mich.

## BRICK, Refractory, Fire (see Refractories)

## BRICK MACHINES AND MOLDS

1. Concrete
  2. Sand-Lime
- **BESSER MFG. CO.**, Alpena, Mich.
  - **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
  - **CONCRETE MACHINERY CO.**, P.O. Drawer 60, Hickory, No. Car.
  - **FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.
  - **HUBER-WARCO**, Marion, Ohio
  - **JACKSON & CHURCH CO.**, 321 N. Hamilton St., Saginaw, Mich.

- **MULTIPLEX MACHINERY CO., DIV. OF MULTIPACK INC.**, Fremont St., Elmore, Ohio
- **THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.

## BUCKET LOADERS

- **AMERICAN BRAKE SHOE COMPANY**, 230 Park Avenue, New York 17, New York
- **BARBER-GREENE CO.**, 400 N. Highland Ave., Aurora, Ill.
- **BAUGHMAN MFG. CO., INC.**, Shipman Road, Jerseyville, Ill.
- **BUTLER BIN CO.**, 945 Blackstone Avenue, Waukesha, Wisc.
- **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.
- **EAGLE CRUSHER CO., INC.**, 1000 Harding Way East, Galion, Ohio
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **N. P. NELSON IRON WORKS, INC.**, 820 Bloomfield Ave., Clifton, N. J.
- **PETTIBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.

## BUCKET LIPS & TEETH

- **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.
- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **BLAW-KNOX CO.**, 2035 Farmers Bank Bldg., Pittsburgh, Pa.
- **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 25th Ave., Portland 10, Ore.
- **THE FROG, SWITCH & MFG. CO.**, Carlisle, Pa.
- **GAR WOOD INDUSTRIES, INC.**, Findlay, Ohio and Wayne, Michigan
- **H & L TOOTH CO.**, 1540 South Greenwood Ave., Montebello, Calif.
- **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.
- **MARION POWER SHOVEL CO.**, 617 W. Center St., Marion, Ohio
- **THE OWEN BUCKET CO.**, 6500 Brookwater Ave., Cleveland 2, Ohio
- **PAGE ENGR. CO.**, Clearing Post Office, Chicago 38, Ill.
- **PRECO, INC.**, 6300 E. Slauson Ave., Los Angeles, Calif.
- **SAUERMAN BROS., INC.**, 620 South 28th Ave., Bellwood, Illinois
- **TAYLOR-WHARTON IRON & STEEL CO.**, High Bridge, N. J.

## BUCKETS

1. Clamshell & Orange Peel
  2. Dragline & Stockline
  3. Dredge & Excavator
  4. Elevator
  5. Grapple
  6. Skip
  7. Tramway
  8. Tractor Loader
- **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.
  - **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
  - **BALDWIN - LIMA - HAMILTON CORP., CRUSHER SALES DIV.**, Lima, Ohio
  - **BAUGHMAN MFG. CO., INC.**, Shipman Road, Jerseyville, Ill.
  - **BEAUMONT BIRCH CO.**, 1505 Race St., Philadelphia 2, Pa.
  - **BERGEN MACHINE & TOOL CO., INC.**, 189 Franklin Avenue, Nutley 10, New Jersey

- **BLAW-KNOX CO.**, 2035 Farmers Bank Bldg., Pittsburgh, Pa.
- **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.
- **BONDED SCALE & MACHINE CO.**, 2176 S. Third St., Columbus, Ohio
- **BUCYRUS-ERIE CO.**, South Milwaukee, Wisc.
- **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.
- **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.
- **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.
- **DROTT MFG. CORP.**, 3841 W. Wisconsin Ave., Milwaukee 8, Wisc.
- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pennsylvania
- **J. B. EHRSAM & SONS MFG. CO.**, Enterprise, Kansas
- **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 25th Ave., Portland 10, Ore.
- **THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio
- **THE FROG, SWITCH & MFG. CO.**, Carlisle, Pa.
- **H & L TOOTH CO.**, 1540 S. Greenwood Ave., Montebello, Calif.
- **GEO. HAISS MFG. CO., INC.**, Div. Pettibone Mulliken Corp., 330 Fifth Ave., New York 1, N.Y.
- **HAYWARD CO.**, 30 Church St., New York 7, N.Y.
- **HENDRICK MFG. CO.**, 39 Dundaff St., Carbondale, Pa.
- **HENDRIX MFG. CO.**, Mansfield, La.
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio
- **C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.**
- **JOS. F. KIESLER CO.**, 938 W. Huron St., Chicago 22, Ill.
- **LESSMANN MFG. CO.**, (Div. of United Steel Bldg. Co.), Lewis Tower Bldg., Philadelphia, Penn.
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.
- **MATERIAL HANDLING INC.**, 4985 Flyer Ave., St. Louis 9, Mo.
- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Ill.
- **ORTON CRANE & SHOVEL CO.**, 608 S. Dearborn, Chicago, Illinois
- **THE OWEN BUCKET CO.**, 6500 Brookwater Ave., Cleveland 2, Ohio
- **PAGE ENGR. CO.**, Clearing Post Office, Chicago 38, Ill.
- **PEKAY MACHINE & ENGINEERING CO.**, 865 Sangamon St., Chicago, Ill.
- **PETTIBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.

• A dot before name indicates ROCK PRODUCTS Advertiser



# DIRECTORY

• PRASCHAK MACHINE CO., Marshfield, Wis.  
4

• "QUICK-WAY" TRUCK SHOVEL CO., 4190 Josephine St., Denver, Colo.  
1-2-3

• SAUERMAN BROS., INC., 620 South 28th Ave., Bellwood, Illinois  
2

• SCHIELD BANTAM CO., Park St., Waverly, Iowa  
1-2-3-5

• SMITH ENGINEERING WORKS, 332 E. Capital Dr., Milwaukee 12, Wis.  
8

• THE STANDARD METAL MFG. CO., Malinta, Ohio  
4

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N. J.  
3-4

• UNIVERSAL ENGINEERING CORP., 625 C. Ave., N.W. Cedar Rapids, Iowa  
8

• UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.  
8

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.  
1-2-3-4-5-6-7-8

• WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio  
4-6

• B. I. WELLER CO., 327 South La Salle St., Chicago, Illinois  
4

• WILLIAMS BUCKET DIV., WELLMANN ENGINEERING CO., 7000 Central Ave., Cleveland 4, Ohio  
1-2-3-5

• YAUM MFG. CO., INC., 2130 N. 3rd St., Baton Rouge, La.  
1-2

• YUBA MFG. CO., 351 California St., San Francisco 4, Calif.  
1

## BULK CEMENT HANDLING EQUIPMENT

• BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.

• BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.

• BEAUMONT BIRCH COMPANY, 1505 Race Street, Philadelphia 2, Penn.

• BLAW-KNOX CO., 2035 Farmers Bank Bldg., Pittsburgh, Pa.

• BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

• BONDED SCALE & MACHINE CO., 2176 S. Third St., Columbus, Ohio

• BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wisc.

• CARRIER CONVEYOR CORP., 2144 Frankfort Avenue, Louisville 6, Ky.

• CEMCO INDUSTRIES, INC., Gallon, Ohio

• CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

• CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

• CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.

• THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio

• FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

• FULLER CO., Catasauqua, Pa.

• GRAMM TRAILER CORP., First Lima Bldg., Lima, Ohio

• THE FRANK G. HOUGH CO., DIV. OF INTERNATIONAL HARVESTER CO., 939 Sunnyside Ave., Libertyville, Ill.

• HOWRY - BERG STEEL & IRON WORKS, 1366 W. Oxford, Denver, Colorado

• JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

• KENNEDY-VAN SAUM MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

• LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

• MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

• NOBLE CO., 1860-7th St., Oakland 20, Calif.

• RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N.J.

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio

## BULK CEMENT STORAGE PLANTS

• BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Illinois

• BLAW-KNOX CO., 2035 Farmers Bank Bldg., Pittsburgh, Pa.

• BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

• BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wisc.

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

• CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

• ERIE-SPRAYER CO., Erie, Pa.

• THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio

• FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

• KENNEDY-VAN SAUM MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

• THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio

• MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

• NEFF & FRY CO., 150 Thomas St., Camden, Ohio

• THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

• NOBLE CO., 1860-7th St., Oakland 20, Calif.

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

• DROTT MFG. CORP., 3841 W. Wisconsin Ave., Milwaukee 8, Wisc.

• THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

• THE FRANK G. HOUGH CO., DIV. OF INTERNATIONAL HARVESTER CO., 939 Sunnyside Ave., Libertyville, Ill.

• INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.

• LE TOURNEAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.

• THE OLIVER CORP., 400 W. Madison St., Chicago 6, Ill.

• PRECO INC., 6300 E. Stausen Ave., Los Angeles, Calif.

• WOOLDRIDGE MFG. CO., Hendy Ave., Sunnyvale, Calif.

## BURNERS, Kiln

• COEN CO., 40 Boardman Place, San Francisco, Calif.

• HAUCK MANUFACTURING COMPANY, 124-136 Tenth St., Brooklyn 15, New York

• JOHNSTON MFG. CO., 2825 E. Hennepin Ave., Minneapolis 13, Minn.

• KENNEDY-VAN SAUM MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

• F. L. SMITH & CO., 20 West 43rd St., New York 36, N.Y.

## BURNERS, OIL (see Oil Burners)

## C

## CABLE, Electric

• ANACONDA WIRE & CABLE CO., 25 Broadway, New York 4, N.Y.

• GENERAL CABLE CORP., 420 Lexington Ave., New York City 17, N.Y.

• GENERAL ELECTRIC CO., 1 River Rd., Schenectady 5, N.Y.

• JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

• OKONITE CO., Passaic, N. J.

• JOHN A. ROEBLING'S SONS CORP., 640 S. Broad St., Trenton 2, N. J.

• SIMPLEX WIRE & CABLE CO., 79 Sidney St., Cambridge 39, Mass.

• UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

• AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP., 614 Superior Ave. N.W., Rockefeller Bldg., Cleveland 13, Ohio

• ANACONDA WIRE & CABLE CO., 25 Broadway, New York 4, N.Y.

• GENERAL ELECTRIC CO., 1 River Rd., Schenectady 5, N.Y.

• JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

• GAR WOOD INDUSTRIES, INC., Findlay, Ohio and Wayne, Michigan

• HARNISCHFEGER CORP., 4400 W. National Ave., Milwaukee 46, Wisc.

• INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.

• KOEHRING CO., 3026 W. Concordia Ave., Milwaukee 16, Wisc.

• LE TOURNEAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.

• SAUERMAN BROS., INC., 620 South 28th Ave., Bellwood, Illinois

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• WOOLDRIDGE MFG. CO., Hendy Ave., Sunnyvale, Calif.

• SAUERMAN BROS., INC., 620 South 28th Ave., Bellwood, Illinois

• AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP., 614 Superior Ave. N.W., Rockefeller Bldg., Cleveland 13, Ohio

• COLUMBIA-GENEVA STEEL DIV., UNITED STATES STEEL CORP., Equitable Life Bldg., San Francisco 6, Calif.

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• WOOD DALE MACHINE & MFG. CO., Commercial Ave., Wood Dale, Ill.

## CALCIUM CHLORIDE

• SOLVAY PROCESS DIV., ALLIED CHEMICAL & DYE CORP., 61 Broadway, N. New York 6, N.Y.

• A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.

• TAMMS INDUSTRIES, INC., 228 N. LaSalle St., Chicago 1, Ill.

## CAPACITATORS, Electric

• GENERAL ELECTRIC CO., 1 River Rd., Schenectady 5, N.Y.

• WESTINGHOUSE ELECTRIC CO., Gateway Bldg., Pittsburgh 30, Pa.

## CAPSTANS & WINCHES

• CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.

• J. B. EHRSAM & SONS MFG. CO., Enterprise, Kansas

• GAR WOOD IND., INC., Wayne Div., Wayne, Mich. and Richmond, California

• MYSTER CO., 2918 N.E. Clackamas St., Portland 8, Ore.

• JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

• PAGE ENGR. CO., Clearing Post Office, Chicago 38, Ill.

• STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.

• TULSA WINCH DIV., VICKERS, INC., 815 E. First St., Tulsa 3, Oklahoma

• WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio

## CAR COUPLINGS, WHEELS & LINERS

• AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.

• AMERICAN MANGANESE STEEL DIV. OF AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

## CAR DUMPERS

• DIFFERENTIAL STEEL CAR CO., Findlay, Ohio

• LINK BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

• ROGERS IRON WORKS CO., Joplin, Mo.

• WELLMANN ENGINEERING CO., 7000 Central Ave., Cleveland 4, Ohio

## CAR LOADERS (see Loaders, Car)

## CAR MOVERS, Pullers

• AMERICAN MOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.

• ARMSTRONG-BRAY & CO., 5364-76 Northwest Highway, Chicago 39, Ill.

• BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

• THE FRANK G. HOUGH CO., DIV. OF INTERNATIONAL HARVESTER CO., 939 Sunnyside Ave., Libertyville, Ill.

• THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio

• W. A. JONES FOUNDRY & MACHINE CO., 4401 Roosevelt Road, Chicago 24, Ill.

• JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

• STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.

• WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio

• WHITING CORP., Harvey, Ill.

• A dot before name indicates ROCK PRODUCTS Advertiser

# DIRECTORY

## CAR SHAKERS

- **ALLIS-CHALMERS MFG. CO.**, 973 So. 70th St., Milwaukee 1, Wisc.
- **HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn.
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.
- **NATIONAL CONVEYOR & SUPPLY CO.**, 356 N. Harding Ave., Chicago 24, Ill.
- **SIMPLICITY ENGINEERING CO.**, 1939 Ralph St., Durand, Mich.
- **STEPHENS-ADAMSON MFG. CO.**, Ridgeway Ave., Aurora, Ill.
- **VIBRO-PLUS PRODUCTS, INC.**, 54-11 Queens Blvd., Woodside 77, N.Y.
- **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio

## CAR THAWERS

- **HAUCK MANUFACTURING COMPANY**, 124-136 Tenth St., Brooklyn 18, New York

## CARS, Concrete Products

- **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio
- **BALDWIN-LIMA-HAMILTON CORP.**, Eddystone Div., Philadelphia 42, Penn.
- **THE CHASE FOUNDRY & MFG. CO.**, 2800 Parsons Avenue, Columbus 7, Ohio
- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.

## CARS, Dump

- **BALDWIN-LIMA-HAMILTON CORP.**, Eddystone Div., Philadelphia 42, Pa.
- **DIFFERENTIAL STEEL CAR CO.**, Findlay, Ohio
- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.

## CARS, Electric, Remote Control

- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.
- **GENERAL ELECTRIC CO.**, 1 River Rd., Schenectady 5, N.Y.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## CARS, Mine, Quarry, Industrial

- **BALDWIN-LIMA-HAMILTON CORP.**, Eddystone Div., Philadelphia 42, Pa.
- **BETHLEHEM STEEL CO.**, Third St., Bethlehem, Pa.
- **DIFFERENTIAL STEEL CAR CO.**, Findlay, Ohio
- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.
- **STRAUB MFG. CO., INC.**, 8383 Baldwin, Oakland, Calif.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## CARS, Railroad, Retaining Doors, Strapping

- **DIFFERENTIAL STEEL CAR CO.**, Findlay, Ohio

## CARTRIDGES, Rotary, Kilns, Slag Removal

- **CARDOX CORP.**, 307 N. Michigan Avenue, Chicago 1, Illinois
- **REMINGTON ARMS CO., INC., DIV. OF E. I. DU PONT DE NEMOURS CO., INC.**, Bridgeport 2, Conn.

## CASTINGS, Repair Parts

1. Bronze
  2. Gray Iron
  3. Heat Resisting Steel
  4. Malleable
  5. Manganese
  6. Special Alloy
  7. Steel
- **A.C.F. INDUSTRIES**, 30 Church St., New York, N.Y.
  - **ALLIS-CHALMERS MFG. CO.**, 973 So. 7th St., Milwaukee 1, Wisc.
  - **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.
  - **AMERICAN BRAKE SHOE COMPANY, NATIONAL BEARING DIVISION**, 4930 Manchester Avenue, St. Louis 10, Missouri
  - **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
  - **BALDWIN-LIMA-HAMILTON CORP.**, Eddystone Div., Philadelphia 42, Pa.
  - **BETHLEHEM STEEL COMPANY**, Third Street, Bethlehem, Penn.
  - **BIRDSBORO STEEL FOUNDRY & MACHINE CO.**, Birdsboro, Pa.
  - **CALUMET STEEL CASTINGS CORP.**, 1636 Summer St., Hammond, Ind.
  - **CONCRETE MACHINERY CO., P.O. Drawer 60**, Hickory, N.C.
  - **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.
  - **DAVENPORT BESLER CORP.**, 2305 Rockingham Road, Davenport, Iowa
  - **DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO.**, 4838 S. Halsted, Chicago, Illinois
  - **DODGE STEEL CO.**, 6501 State Road, Philadelphia 35, Pa.
  - **EAGLE IRON WORKS**, 137 Holcombe Ave., Des Moines 4, Iowa
  - **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 25th Ave., Portland 10, Ore.
  - **THE FALK CORP.**, 3001 W. Canal St., Milwaukee 8, Wisc.
  - **FARRELL-BACON**, Ansonia, Conn.
  - **FARRELL-CHEEK STEEL COMPANY**, Sandusky, Ohio
  - **THE FROG, SWITCH & MFG. CO.**, Carlisle, Pa.
  - **HARDINGE CO., INC.**, 240 Arch St., York, Pa.
  - **HAYNES STELLITE CO.**, 725 S. Lindsay, Kokomo, Ind.
  - **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
  - **KENSINGTON STEEL CO.**, 505 Kensington Ave., Chicago 28, Ill.
  - **McLANAHAN & STONE CORP.**, Wall & Jackson Sts., Haledaysburg, Pa.
  - **McNALLY PITTSBURG MFG. CORP.**, W. Third St., Pittsburgh, Kan.
  - **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois
  - **MIOWALE CO.**, Nicetown, Philadelphia, Pa.

- **PETTIBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.
- **ROGERS IRON WORKS CO.**, Joplin, Mo.
- **STOODY CO.**, Whittier, Calif.
- **STAR EXPANSION PRODUCTS CO., INC.**, 147 Cedar St., New York 6, N.Y.
- **STULTZ-SICKLES CO.**, 134 Lafayette St., Newark 5, N.J.
- **TAYLOR-WHARTON IRON & STEEL CO.**, High Bridge, N.J.
- **THOMAS FOUNDRIES, INC.**, 3800 10th Ave., Birmingham 1, Ala.
- **VICTOR EQUIPMENT CO.**, 844 Folsom St., San Francisco 7, Calif.
- **VULCAN IRON WORKS**, 730 So. Main St., Wilkes-Barre, Pa.
- **WALL COLMONOY CORP.**, 19345 John R St., Detroit 3, Mich.
- **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio
- **YUBA MFG. CO.**, 351 California St., San Francisco 4, Calif.

## CEMENT

- **CEMCO INDUSTRIES, INC.**, Galien, Ohio
- **GENERAL PORTLAND CEMENT CO., TRINITY WHITE DIV.**, 111 West Monroe St., Chicago 3, Ill.
- **HARRISON-WALKER REFRACTORIES CO.**, 1800 Farmers Bank Bldg., Pittsburgh 22, Pa.
- **IDEAL PORTLAND CEMENT CO.**, Denver National Bank Bldg., Denver, Colorado
- **LEHIGH PORTLAND CEMENT, Young Bldg.**, Allentown, Pennsylvania
- **LONE STAR CEMENT CORP.**, 100 Park Ave., New York 17, N.Y.
- **MARQUETTE CEMENT MFG. CO.**, 20 N. Wacker Dr., Chicago 6, Ill.
- **MEDUSA PORTLAND CEMENT CO.**, 1000 Midland Bldg., Cleveland 13, Ohio
- **PENN-DIXIE CEMENT CORP.**, 60 E. 42nd St., New York 17, N.Y.
- **UNIVERSAL ATLAS CEMENT CO.**, 100 Park Avenue, New York 17, N.Y.

## CEMENT COOLERS (see Coolers, Bulk Cement)

## CEMENT DISPERSION AGENTS

- **DEWEY AND ALMY CHEMICAL CO., DIV. OF W. R. GRACE & CO.**, 62 Whittemore Ave., Cambridge 40, Mass.
- **A. C. HORN CO., INC.**, 10th St. & 44th Ave., Long Island City 1, N.Y.
- **MAGIC CHEMICAL CO.**, 118 Crescent St., Brockton 2, Mass.
- **THE MASTER BUILDERS CO.**, 7016 Euclid Ave., Cleveland 3, Ohio
- **MONSANTO CHEMICAL CO., PHOSPHATE DIV.**, 1700 S. Second St., St. Louis 4, Mo.
- **VERISSET CORP.**, 150 Nassau St., New York City 38, N.Y.
- **VICTOR CHEMICAL CORP.**, 155 N. Wacker Drive, Chicago, Illinois

## CEMENT AND MASONRY COLORS

- **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.

- **CHASE CONCRETE MACHINERY CO.**, 94 Grandview Avenue, Buffalo 23, New York
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **COLUMBIAN CARBON CO., MAP-ICO COLOR DIV.**, Binnay & Smith Co., Dist. 380 Madison Ave., New York 17, N.Y.
- **FRANK D. DAVIS CO.**, 2704 Santa Fe Ave., Los Angeles 38, Calif.
- **A. C. HORN CO., INC.**, 10th St. & 44th Ave., Long Island City 1, N.Y.
- **LANDERS-SEGAL COLOR CO.**, 78 Delevan St., Brooklyn 31, N.Y.
- **THE MASTER BUILDERS CO.**, 7016 Euclid Ave., Cleveland 3, Ohio
- **MINERAL PIGMENTS CORP.**, Washington Blvd., Muirkirk, Md.
- **REICHARD-COULSTON INC.**, 17 East 26th St., New York 7, N.Y.
- **J. LEE SMITH & CO., INC.**, 105 Main St., New York 38, N.Y.
- **SMITH CHEMICAL & COLOR, INC.**, Brooklyn 1, N.Y.
- **TAMAS INDUSTRIES, INC.**, 228 N. LaSalle St., Chicago 1, Ill.
- **C. K. WILLIAMS & CO.**, 640 N. 13th St., Easton, Pa.

## CEMENT PLANT, Engineers & Contractors

- **BLAW-KNOX CO.**, 2035 Farmers Bank Bldg., Pittsburgh, Pa.
- **A. J. BOYNTON & CO.**, 109 N. Wabash, Chicago 2, Illinois
- **BUTLER BIN CO.**, 945 Blackstone Ave., Waukesha, Wisc.
- **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.
- **FANNING SCHUETT ENGINEERING CO.**, 4325 N. Third Street, Philadelphia 40, Pa.
- **E. LEE HEIDENREICH, JR.**, 75 Second St., Newburgh, N.J.
- **W. P. HEINEKEN, INC.**, 50 Broad St., New York 3, N.Y.
- **C. S. JOHNSON CO., P. O. Box 71**, Champaign, Ill.
- **KAISER ENGINEERS**, Kaiser Bldg., Oakland, Calif.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **MACDONALD ENGR. CO.**, 188 W. Randolph St., Chicago 1, Ill.
- **MATERIAL HANDLING INC.**, 4985 Flyer Ave., St. Louis 9, Mo.
- **McDOWELL COMPANY, INC.**, 3203 W. 71st St., Cleveland 2, Ohio
- **THE NICHOLSON CO., INC.**, 10 Rockefeller Plaza, New York 20, N.Y.
- **NOBLE COMPANY**, 1860 Seventh St., Oakland 20, Calif.
- **F. L. SMITH & CO.**, 20 West 43rd St., New York 36, N.Y.
- **STEARNS-ROGERS MFG. CO.**, 660 Bannock St., Denver, Colorado
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.
- **WESTERN KNAPP ENGINEERING**, 760 Folsom St., San Francisco, Calif.
- **WILLARD CONCRETE MACHINERY CO., LTD.**, 11700 Wright Rd., Lynwood, Calif.

## CEMENT PUMPS, Finished Cement (see Pumps, Cement)

## CEMENT TESTING APPARATUS

- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **HUMBOLDT MFG. CO.**, 2014 N. Whipple St., Chicago 47, Ill.
- **KILLINGER EQUIPMENT CO., DIV. OF HALES TESTING LABS**, 4514 Hollis St., Emeryville, Calif.

• A dot before name indicates ROCK PRODUCTS Advertiser

# DIRECTORY

## CENTRAL MIXING PLANTS, Concrete

- **BLAW-KNOX CO.**, 2035 Farmers Bank Bldg., Pittsburgh, Pa.
- **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.
- **I. BURMEISTER CO.**, 4535 W. Mitchell St., Milwaukee 14, Wisc.
- **BUTLER BIN CO.**, 945 Blackstone Ave., Waukesha, Wisc.
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **CONCRETE EQUIPMENT CO.**, 544 Ottawa Ave., Holland, Mich.
- **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.
- **FANNING SCHUETT ENGINEERING CO.**, 4325 N. Third Street, Philadelphia 40, Pa.
- **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **MATERIAL HANDLING INC.**, 4985 Flyer Ave., St. Louis 9, Mo.
- **NOBLE CO.**, 1860-7th St., Oakland 20, Calif.
- **THE T. L. SMITH CO.**, 2835 N. 32nd St., Milwaukee 10, Wisc.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.
- **WILLARD CONCRETE MACHINERY CO., LTD.**, 11700 Wright Rd., Lynwood, Calif.
- **WORTHINGTON CORP.**, 426 Washington Blvd., Harrison, N. J.

## CENTRIFUGES, Cement Slurry, etc.

- **BIRD MACHINE COMPANY**, South Walpole, Massachusetts
- **DORR-OLIVER, INC.**, 31 West 42nd St., New York 18, N.Y.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **F. L. SMITH & CO.**, 20 West 43rd St., New York 36, N.Y.

## CHAIN, Dredge and Shovel

- **AMERICAN CHAIN DIVISION, AMERICAN CHAIN & CABLE CO., INC.**, York, Pennsylvania
- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.

## CHAIN DRIVES (see Drives)

## CHAIN, Elevating and Conveying

- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.
- **DIAMOND CHAIN CO., INC.**, 402 Kentucky Ave., Indianapolis 7, Ind.
- **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 25th Ave., Portland 10, Ore.
- **THE FAIRFALL CO.**, 150th & Lexington Aves., Harvey, Ill.
- **THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio
- **FANNING SCHUETT ENGINEERING CO.**, 4325 N. Third Street, Philadelphia 40, Pa.
- **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio

- **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.
- **KENSINGTON STEEL CO.**, 305 Kensington Ave., Chicago 28, Ill.
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.
- **McNALLY PITTSBURG MFG. CORP.**, W. Third St., Pittsburgh, Kan.
- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Ill.
- **TAYLOR-WHARTON IRON & STEEL CO.**, High Bridge, N. J.
- **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio
- **WITTEMANN MACHINERY CO.**, Farmingdale, N. J.

## CHAIN, Heat Exchanger

- **JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.
- **F. L. SMITH & CO.**, 20 W. 43rd St., New York 36, N.Y.
- **VULCAN IRON WORKS**, 730 S. Main St., Wilkes-Barre, Pa.

## CHAIN LINKS, Fittings, Hooks, etc.

- **AMERICAN CHAIN DIVISION, AMERICAN CHAIN & CABLE CO., INC.**, York, Pennsylvania
- **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio
- **KENSINGTON STEEL CO.**, 305 Kensington Ave., Chicago 28, Ill.
- **THE THOMAS LAUGHLIN DIV. OF AMERICAN HOIST & DERRICK CO.**, 143 Fore Street, Portland 6, Maine
- **LINK-BELT CO.**, 307 N. Michigan Ave., Chicago 1, Ill.
- **McNALLY PITTSBURG MFG. CORP.**, W. Third St., Pittsburgh, Kan.

## CHAINS, Drag

- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.
- **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 25th Ave., Portland 10, Ore.
- **JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio
- **KENSINGTON STEEL CO.**, 305 Kensington Ave., Chicago 28, Ill.
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.
- **SMITH ENGINEERING WORKS**, 352 Capital Dr., Milwaukee 12, Wisc.
- **TAYLOR-WHARTON IRON & STEEL CO.**, High Bridge, N. J.
- **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio

## CHUTE LININGS, Rubber

- **ASA MFG. CO.**, 2017 W. Clybourn St., Milwaukee 3, Wisc.
- **THE AMERICAN RUBBER MFG. CO.**, 1145 Park Avenue, Oakland 8, Calif.
- **BOSTON WOVEN HOSE & RUBBER COMPANY**, P.O. Box 1071, Boston 3, Massachusetts
- **CARLYLE RUBBER CO., INC.**, 62 Park Place, New York 7, N.Y.
- **GATES RUBBER CO.**, 999 S. Broadway, Denver, Colorado
- **GOODALL RUBBER CO.**, 403 Whitehead Road, Trenton 4, N. J.
- **B. F. GOODRICH CO.**, 500 South Main St., Akron 11, Ohio
- **THE GOODYEAR TIRE & RUBBER CO., INC.**, 1144 E. Market St., Akron 16, Ohio
- **HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn.

- **PIONEER RUBBER MILLS**, 520 Fourth St., San Francisco 11, Calif.
- **RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV.**, 92 Townsend St., Passaic, N. J.
- **REPUBLIC RUBBER DIV., LEE RUBBER & TIRE CORP.**, Albert St., Youngstown 1, Ohio
- **THERMOID CO.**, 200 Whitehead Rd., Trenton, N. J.
- **UNITED STATES RUBBER CO.**, 1230 Ave. of the Americas, New York 20, N.Y.

## CHUTE LININGS, Other

- **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.
- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois
- **REES BLOW PIPE MFG. CO.**, 340 Seventh St., San Francisco 3, Calif.
- **STOODY CO.**, Whittier, Calif.
- **STULZ-SICKLES CO.**, 134 Lafayette St., Newark 5, N. J.
- **TAYLOR-WHARTON IRON & STEEL CO.**, High Bridge, N. J.
- **THOMAS FOUNDRIES, INC.**, 3800 10th Ave., Birmingham 1, Ala.
- **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio

## CHUTES

- **BARBER-GREENE COMPANY**, 400 N. Highland Avenue, Aurora, Ill.
- **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.
- **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.
- **CONTINENTAL GIN CO.**, 4500 5th Ave. South, Birmingham, Alabama
- **DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO.**, 4838 S. Halsted, Chicago, Illinois
- **THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio
- **HENDRICK MFG. CO.**, 39 Dundaff St., Carbondale, Pa.
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.
- **THE KIRK & BLUM MFG. CO.**, 3120 Farrer St., Cincinnati 9, Ohio
- **LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wisc.
- **MATERIAL HANDLING INC.**, 4985 Flyer Ave., St. Louis 9, Mo.
- **McNALLY PITTSBURG MFG. CORP.**, W. Third St., Pittsburgh, Kan.
- **MECKUM ENGINEERING INC.**, Dayton Rd., Ottawa, Ill.
- **REES BLOW PIPE MFG. CO.**, 340 Seventh St., San Francisco 3, Calif.
- **THE STANDARD METAL MFG. CO.**, Malinta, Ohio
- **STRAUB MFG. CO., INC.**, 8383 Baldwin, Oakland 20, Calif.
- **STURTEVANT MILL CO.**, 102 Clayton St., Dorchester, Boston 22, Mass.
- **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio

## CHUTES, Spiral

- **FANNING SCHUETT ENGINEERING CO.**, 4325 N. Third Street, Philadelphia 40, Pa.
- **JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio
- **McNALLY PITTSBURG MFG. CORP.**, W. Third St., Pittsburgh, Kan.

## CIRCUIT BREAKERS, Electric

- **ALLIS-CHALMERS MFG. CO.**, 979 So. 70th St., Milwaukee 1, Wisc.
- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 3, N.Y.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## CIRCUIT TESTERS, Electric

- **AMERICAN CYANAMID CO., EXPLOSIVES DEPT.**, 30 Rockefeller Plaza, New York, N.Y.
- **ATLAS POWDER COMPANY**, Wilmington 99, Delaware
- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 3, N.Y.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## CLARIFIERS, AIR (see Air Filters)

## CLARIFIERS, Oil (see Air Filters)

## CLASSIFIERS

1. Air
2. Electrostatic
3. Hydraulic

**BIRD MACHINE COMPANY**, South Walpole, Massachusetts

- **COLORADO IRON WORKS**, 1624 17th St., Denver, Colorado
- **COMBUSTION ENGINEERING, INC., RAYMOND DIV.**, 1315 N. Branch St., Chicago 22, Ill.

- **THE DEISTER CONCENTRATOR CO.**, 933 Glasgow Ave., Fort Wayne 1, Ind.

- **DEISTER MACHINE CO.**, 1933 East Wayne St., Fort Wayne 4, Ind.

- **DORR-OLIVER, INC.**, Barry Place, Stamford, Conn.

- **EAGLE IRON WORKS**, 127 Halcomb Ave., Des Moines 4, Iowa

- **EQUIPMENT ENGINEERS INC.**, 41 Suffer St., San Francisco 4, Calif.

- **HARDINGE CO., INC.**, 240 Arch St., York, Pa.

- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.

- **H. B. LARGE ENGINEERING CO.**, 262 S. Parkwood Ave., Pasadena, California

- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois

- **THE MINE & SMELTER SUPPLY CO.**, 17th & Blake, Denver 17, Colo.

- **SANDCONE SEPARATOR CO.**, 1709 West 8th St., Los Angeles 17, Calif.

- **SMITH ENGINEERING WORKS**, 332 East Capital Dr., Milwaukee 12, Wisc.

- **STURTEVANT MILL COMPANY**, 102 Clayton St., Dorchester, Boston 22, Mass.

- **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

- **CHARLES E. WOOD**, 906 North Water St., Milwaukee, Wisconsin

## CLASSIFIERS, SAND (see Sand Recovery Machinery)

• A dot before name indicates ROCK PRODUCTS Advertiser



# DIRECTORY

## CLEANING MACHINES, Bag (see Bag Cleaners)

## CLINKER COOLERS

1. Grate
  2. Rotary
- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis. 1—2
  - DWIGHT-LLOYD DIV. OF THE McDOWELL CO., INC., 16300 Waterloo Road, Cleveland, Ohio
  - THE FAHRALLOY CO., 130th & Lexington Aves., Harvey, Ill. 1
  - FULLER CO., Catasauqua, Pa. 1
  - W. P. HEINEKEN, INC., 80 Broad St., New York 3, N.Y. 1—2
  - KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y. 1—2
  - MANITOWOC SHIPBUILDING, INC., 16th & River Sts., Manitowoc, Wis. 1—2
  - NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis. 2
  - F. L. SMITH & CO., 20 West 43rd St., New York 36, N.Y. 1—2
  - STRONG-SCOTT MFG. CO., 451 Taft St. N.E., Minneapolis 13, Minn. 3
  - TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa. 2
  - VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa. 2
  - WESTERN PRECIPITATION CORP., 1016 W. Ninth St., Los Angeles 15, Calif. 1

## CLIPS, WIRE ROPE (see Wire Rope Fittings)

## CLOTH, WIRE (see Wire Cloth)

## CLUTCH FACINGS (see Brake Linings)

## CLUTCHES

- DODGE MFG. CORP., 1952 Williams St., Mishawaka, Ind.
- DYNAMIC CORP., 3307 14th Ave., Kenosha, Wis.
- J. B. EHRMAN & SONS MFG. CO., Enterprise, Kansas
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- STEARNS MAGNETIC, INC., 675 S. 28th St., Milwaukee, Wis.
- TWIN DISC CLUTCH CO., Racine, Wisconsin

## COAL PULVERIZING EQUIPMENT

- AMERICAN PULVERIZER CO., 1245 Mackland Avenue, St. Louis, Mo.
- THE BARCOCK & WILCOX CO., 161 W. 42nd St., New York 17, N.Y.
- BONDED SCALE AND MACHINE CO., 2176 S. Third St., Columbus 7, Ohio
- COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1315 N. Branch St., Chicago 22, Ill.
- EAGLE CRUSHER CO., INC., 1000 Harding Way East, Galien, Ohio
- GRUNDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 8, Mo.
- HARDINGE CO., INC., 240 Arch St., York, Pa.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- McNALLY PITTSBURGH MFG. CORP., W. Third St., Pittsburgh, Kan.
- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.
- STURTEVANT MILL CO., 102 Clayton St., Dorchester, Boston 22, Mass.
- UNIVERSAL ENGINEERING CORP., 625 C Ave., N.W., Cedar Rapids, Iowa
- WHITING CORP., Harvey, Ill.

## COAL PULVERIZING EQUIPMENT, Direct-Firing Unit Mills

- THE BARCOCK & WILCOX CO., 161 W. 42nd St., New York 17, N.Y.
- COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1315 N. Branch St., Chicago 22, Ill.
- HARDINGE CO., INC., 240 Arch St., York, Pa.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.
- THE STRONG-SCOTT MFG. CO., 451 Taft St., N.E., Minneapolis 13, Minn.

## COLORS, Cement (see Cement and Masonry Colors)

## COMMUNICATIONS SYSTEMS

- AUTOMATIC ELECTRIC CO., 1031 W. Van Buren St., Chicago, Ill.
- INDUSTRIAL RADIO CORP., 428 N. Parkside Ave., Chicago 44, Illinois
- M&M ENGR. CORP., 1017 W. 23rd St., Indianapolis 23, Ind.
- MINE SAFETY APPLIANCES CO., 201 N. Braddock Ave., Pittsburgh 8, Pa.
- MOTOROLA COMMUNICATIONS & ELECTRONICS, INC., 4501 Augusta Blvd., Chicago, Illinois
- RADIO CORP. OF AMERICA, RCA VICTOR DIV., Front & Cooper Sts., Camden 2, N. J.
- TALK-A-PHONE CO., 1512 S. Pulaski, Chicago, Illinois
- TEL AUTOGRAPH CORP., 1128 Cranshaw Blvd., Los Angeles, Calif.

## CONCENTRATING TABLES

- THE CLEVELAND VIBRATOR CO., 2828 Clinton Avenue, Cleveland 13, Ohio
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- THE DEISTER CONCENTRATOR CO., 935 Glasgow Ave., Fort Wayne 1, Ind.
- DEISTER MACHINE COMPANY, 1933 E. Wayne St., Fort Wayne 4, Ind.
- DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 5268, Denver 17, Colo.
- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.
- STRAUB MFG. CO., INC., 8383 Baldwin, Oakland 20, Calif.
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.

- CHARLES E. WOOD, 906 North Water St., Milwaukee, Wis.

## CONCRETE BLOCK (Faced)

- MARBLE FACE BLOCKS, INC., (MARBLOX), Michigan Ave., Kenilworth, N. J.

## CONCRETE BLOCK MACHINES (see Block Machines)

## CONCRETE CONTROL SYSTEMS, Quality

- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- M&M ENGR. CORP., 1017 W. 23rd St., Indianapolis 23, Ind.
- RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N. J.
- SCIENTIFIC CONCRETE SERVICE CORP., 724 Salem Ave., Elizabeth 3, N. J.

## CONCRETE, Dry-Batched

- DRYCRETE, INC., P. O. Box 631, Brewton, Ala.
- SAKRETE, INC., Fisher Ave. & B&O R.R., Cincinnati 17, Ohio

## CONCRETE MASONRY REINFORCING

- A. A. WIRE PRODUCTS, 7211 S. Cottage Grove Ave., Chicago, Ill.
- DUR-O-WAL PRODUCTS, INC., P.O. Box 628, Syracuse 1, N.Y.
- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.

## CONCRETE MIXERS

1. Batch Plant
  2. Continuous
  3. Job, Portable
- ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio 1—2
  - W. A. ANTHONY ENG. CO., Berea, Ohio 1
  - BERGEN MACHINE & TOOL CO., INC., 189 Franklin Avenue, Nutley 10, New Jersey 1
  - BESSER MFG. CO., Alpena, Mich.
  - CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis. 3
  - CHASE CONCRETE MACHINERY CO., 94 Grandview Ave., Buffalo 23, N.Y. 1—2—3
  - GEO. C. CHRISTOPHER & SON, INC., 1220 Blaine, Box 607, Wichita 1, Kansas 2—3
  - COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington 1
  - CONCRETE MACHINERY CO., P.O. Drawer 60, Hickory, N. C. 3
  - CONCRETE TRANSPORT MIXER CO., 4967 Flyer Ave., St. Louis 9, Mo. 1
  - DES PLAINES CONCRETE PROD. MACHINERY, 930 North Ave., Des Plaines, Ill. 1
  - W. E. DUNN MANUFACTURING CO., 24th & Ottawa Ave., Holland, Mich. 1—2
  - FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo. 1

- GENERAL ENGINES CO., INC., 307 Hunter St., Gloucester City, N. J. 1

- GILSON BROTHERS CO., Fredonia, Wis. 3

- THE JAEGER MACHINE CO., 550 W. Spring St., Columbus 16, Ohio 3

- J. A. JONES CONCRETE MACHINERY CO., 108 Horning Road, Pittsburgh 34, Pa. 2

- KENT MACHINE COMPANY, Cuyahoga Falls, Ohio 1

- TRUCK-MAN DIV., THE KNICKERBOCKER CO., 603 Liberty St., Jackson, Mich. 1—3

- KWIK MIX COMPANY, Port Washington, Wis. 1—2—3

- LE ROI COMPANY, 1706 South 68th St., Milwaukee 14, Wis. 3

- LITH-I-BAR CO., Holland, Mich. 1

- MIXERMOBILE MANUFACTURERS, 6855 N.E. Halsey St., Portland, Ore. 3

- MULTIPLEX MACHINERY CO., DIV. OF MULTIPACK INC., Fremont St., Elmore, Ohio 1

- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich. 1

- PRASCHAK MACHINE CO., Marshfield, Wis. 1—2—3

- THE T. L. SMITH CO., 2835 N. 32nd St., Milwaukee 10, Wis. 1—2—3

- STEARNS MFG. CO., INC., 600 E. Beecher, Adrian, Mich. 1

- TRUAX MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash. 1

- RICHARD P. WALSH CO., 30 Church St., New York, N.Y. 1—2—3

- WILLARD CONCRETE MACHINERY CO., LTD., 11700 Wright Rd., Lynwood, Calif. 1—2—3

- WITTEMAN MACHINERY CO., Farmingdale, N. J. 1

- WORTHINGTON CORP., 426 Washington Ave., Harrison, N. J. 1—2—3

## CONCRETE MIXERS, Truck (see Bodies, Ready Mixed Concrete)

## CONCRETE MIXING PLANTS (see Central Mixing Plants)

## CONCRETE PAINTS AND COATINGS

- CHASE CONCRETE MACHINERY CO., 94 Grandview Ave., Buffalo 23, N.Y.
- E. D. CODDINGTON MFG. CO., 3024 N. 37th Street, Milwaukee 9, Wisconsin
- A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.
- MAGIC CHEMICAL CO., 118 Crescent St., Brockton 2, Mass.
- THE MASTER BUILDERS CO., 7016 Euclid Ave., Cleveland 3, Ohio
- MEDUSA PORTLAND CEMENT CO., 1000 Midland Bldg., Cleveland 13, Ohio

## CONCRETE PREMIX PLANTS, Dry

- BUTLER BIN CO., 989 Blackstone Ave., Waukesha, Wis.

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## DIRECTORY

- **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.
- **MATERIAL HANDLING INC.**, 4985 Flyer Ave., St. Louis 9, Mo.

### CONCRETE PRODUCTS CURING EQUIPMENT (see Kilns, Concrete Curing)

### CONCRETE PRODUCTS HANDLING EQUIPMENT

- ANCHOR CONCRETE MACHINERY COMPANY**, 1191 Fairview Avenue, Columbus 12, Ohio
- **BUILDERS EQUIPMENT CO.**, 4012 North Central, Phoenix, Ariz.
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **CONCRETE EQUIPMENT CO.**, 544 Ottawa Ave., Holland, Mich.
- **CONCRETE TRANSPORT MIXER CO.**, 4985 Flyer Ave., St. Louis 9, Mo.
- **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.
- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.
- **GERLINGER CARRIER CO.**, Dallas, Ore.
- **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio
- **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.
- **KOEHRING CO.**, 3026 W. Concordia Ave., Milwaukee 16, Wis.
- **MATERIAL HANDLING INC.**, 4895 Flyer Ave., St. Louis 9, Mo.
- **MULTIPLEX MACHINERY CO., DIV. OF MULTIPACK, INC.**, Fremont St., Elmore, Ohio
- **THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.

### CONCRETE SPECIALTY FORMS

- A. Bins, Tanks, Silos
  1. Burial Vault
  2. Cribbing
  3. Curb & Gutter
  4. Fence Posts and Poles
  5. Floor System
  6. Floor & Roof Slab
  7. Garbage Disposal Unit
  8. Garden & Ornamental Furniture
  9. Joist
  10. Laundry Tray
  11. Manholes, Curbing & Blocks
  12. Partitions
  13. Pipe, Culvert & Sewer
  14. Septic Tank
  15. Sill & Lintel
  16. Step, Precast
  17. Tile & Conduit
  18. Walls, Foundation
- **BERG VAULT COMPANY**, 1620 Lucas Hunt Road, St. Louis 20, Mo.
  - **BERGEN MACHINE & TOOL CO., INC.**, 189 Franklin Avenue, Nutley 19, New Jersey
  - **BLAW-KNOX CO.**, 2035 Farmers Bank Bldg., Pittsburgh, Pa.
  - **CARPENTER MFG. CO.**, 175 Master Light Bldg., Boston 45, Mass.
  - **CHASE CONCRETE MACHINERY CO.**, 94 Grandview Ave., Buffalo 23, N.Y.
  - **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
  - **CONCRETE EQUIPMENT CO.**, 4012 Flyer Ave., St. Louis 9, Mo.
  - **CONCRETE MACHINERY CO.**, P.O. Drawer 60, Hickory, Mo. Car.

**CONCRETE PIPE MACHINERY CO.**, First & George St., Sioux City, Iowa

- **CONCRETE POST FORM CO.**, Box 368, Cedar Falls, Iowa
- **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.
- **ROY DARDEN INDUSTRIES, INC.**, P.O. Box 93, Northside Branch, Atlanta, Georgia
- **DES PLAINES CONCRETE PROD. MACHINERY**, 930 North Ave., Des Plaines, Ill.
- **DOUGLAS FIBRE PLYWOOD ASSOC.**, 1119 A St., Tacoma 2, Wash.
- **W. E. DUNN MANUFACTURING CO.**, 24th & Ottawa Ave., Holland, Mich.
- **ECONOMY FORMS CORP.**, Box 128, Des Moines, Iowa
- **FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.
- **FOOD MACHINERY & CHEMICAL CO.**, Florida Div., Box 1718, Lakeland, Florida
- **A. C. HORN CO., INC.**, 10th St. & 44th Ave., Long Island City 1, N.Y.
- **HOUSTON CONCRETE PIPE CO.**, 6600 Washington Ave., P.O. Box 7767, Houston 7, Texas
- **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.
- **KEWANEE MANUFACTURING CO.**, Kewanee, Ill.
- **THE KIRK & BLUM MFG. CO.**, 3120 Farrer St., Cincinnati 9, Ohio
- **NORWALK VAULT CO.**, Norwalk, Ohio
- **PRECASTER, INC.**, 5211 Beech St., Cincinnati 17, Ohio
- **QUINN WIRE & IRON WORKS**, Boone, Iowa
- **STURTEVANT MILL COMPANY**, 102 Clayton St., Dorchester, Boston 22, Mass.
- **THERMOFLECTOR CORP.**, North Sioux City, S. D.
- **THOMAS STEEL FORMS**, 25257 West Eight Mile Road, Detroit 19, Mich.
- **VENTO STEEL PRODUCTS CO., INC.**, 230 Colorado Ave., Buffalo, N.Y.
- **WILLARD CONCRETE MACHINERY CO., LTD.**, 11700 Wright Rd., Lynwood, Calif.
- **ROGER F. WILLIAMS**, 3420 West 9th St., Des Moines 15, Iowa
- **ZEIDLER CONCRETE PRODUCTS MACHINERY CO.**, Newell & Mobile St., Waterloo, Iowa

- **QUINN WIRE & IRON WORKS**, Boone, Iowa
- **STURTEVANT MILL COMPANY**, 102 Clayton St., Dorchester, Boston 22, Mass.

**THERMOFLECTOR CORP.**, North Sioux City, S. D.

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**ZEIDLER CONCRETE PRODUCTS MACHINERY CO.**, Newell & Mobile St., Waterloo, Iowa

### CONCRETE SPECIALTY MACHINES

1. Chimney & Flue Block
  - 1A. Drain Tile
  2. Fence Post
  - 3A. Ornamental Fence Blocks
  4. Pipe, Culvert & Sewer
  5. Roof Tile
  6. Sill & Lintel
  7. Sill & Lintel
  8. Tile & Conduit
- J. W. APPLEY & SON, INC.**, 531 9th St. North, St. Petersburg 2, Fla.

**BESSER MFG. CO.**, Alpena, Mich.

**COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington

**CONCRETE EQUIPMENT CO.**, 544 Ottawa St., Holland, Mich.

**CONCRETE MACHINERY CO.**, P.O. Drawer 60, Hickory, Mo. Car.

**CONCRETE POST FORMS CO.**, Cedar Falls, Iowa

**ROY DARDEN INDUSTRIES, INC.**, P.O. Box 93, Northside Branch, Atlanta, Georgia

**FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.

**GENERAL ENGINES CO., INC.**, 307 Hunter St., Gloucester City, N. J.

**HOUSTON CONCRETE PIPE CO.**, 6600 Washington Ave., P.O. Box 7767, Houston 7, Texas

**LITN-I-BAR CO.**, Holland, Mich.

**MULTIPLEX MACHINERY CO., DIV. OF MULTIPACK, INC.**, Fremont St., Elmore, Ohio

**NASHUA TILE CO.**, Nashua, Iowa

**THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.

**QUINN WIRE & IRON WORKS**, Boone, Iowa

**UNIVERSAL CONCRETE PIPE CO.**, 297 S. High St., Columbus 15, Ohio

**ZEIDLER CONCRETE PRODUCTS MACHINERY CO.**, Newell & Mobile St., Waterloo, Iowa

### CONCRETE WATER-PROOFING AND DAMPROOFING

- **E. D. CODDINGTON MFG. CO.**, 5024 N. 37th Street, Milwaukee 9, Wisc.
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **DEWEY AND ALMY CHEMICAL**, Div. of W. R. Grace Co., 62 Whittemore Ave., Cambridge 40, Mass.
- **A. C. HORN CO., INC.**, 10th St. & 44th Ave., Long Island City 1, N.Y.
- **KOPPERS CO., INC.**, Koppers Bldg., Pittsburgh, Pennsylvania
- **THE MASTER BUILDERS CO.**, 7016 Euclid Ave., Cleveland 3, Ohio
- **MEUSA PORTLAND CEMENT CO.**, 1000 Midland Bldg., Cleveland 15, Ohio
- **SPRAY-O-BOND**, 2225 N. Humboldt Ave., Milwaukee, Wis.
- **TAMMS INDUSTRIES, INC.**, 228 N. LaSalle St., Chicago 1, Ill.

### CONDUIT, Electrical

**JOHNS-MANVILLE**, 22 E. 40th St., New York 16, N.Y.

### CONTROL SYSTEMS

1. Draft
  2. Pressure
  3. Temperature
- **BAILEY METER CO.**, 1050 Ivanhoe Road, Cleveland 10, Ohio
  - **THE FOXBORO CO.**, 38 Neponset Ave., Foxboro, Mass.
  - **THE HAYS CORP.**, 742 East 8th St., Michigan City 21, Ind.
  - **POWERS REGULATOR CO.**, 3400 Oakton, Skokie, Illinois

### CONTROLS, Bin and Tank Level

- **THE BIN-DICATOR COMPANY**, 13946 Kercheval Avenue, Detroit 15, Michigan
- **BUTLER BIN CO.**, 945 Blackstone Ave., Waukesha, Wisc.
- **CONCRETE TRANSPORT MIXER CO.**, 4985 Flyer Ave., St. Louis 9, Mo.
- **THE FOXBORO CO.**, 38 Neponset Ave., Foxboro, Mass.
- **JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio
- **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **MATERIAL HANDLING INC.**, 4985 Flyer Ave., St. Louis 9, Mo.
- **RICHARDSON SCALE CO.**, 668-698 Van Houten Ave., Clifton, N. J.
- **SYNTRON COMPANY**, 430 Lexington Ave., Hamer City, Pa.

### CONVERTERS, Electric

- **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc.
- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.
- **SYNTRON CO.**, 430 Lexington Ave., Hamer City, Pa.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

### CONVEYOR BELT TRIP-PERS

- **BARBER-GREENE COMPANY**, 400 N. Highland Avenue, Aurora, Ill.
- **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.
- **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.
- **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.
- **HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn.
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.
- **LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wisc.
- **STEPHENS-ADAMSON MFG. CO.**, 275 Ridgeway Ave., Aurora, Ill.
- **UNIVERSAL ENGINEERING CORP.**, 625 C Ave. N.W., Cedar Rapids, Iowa
- **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio

### CONVEYOR IDLERS, Belt

- **BARBER-GREENE CO.**, 400 N. Highland Ave., Aurora, Ill.
- **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.
- **BONDED SCALE AND MACHINE CO.**, 2176 S. Third St., Columbus 7, Ohio
- **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.
- **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.
- **DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO.**, 4838 S. Halsted, Chicago, Illinois
- **THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio
- **HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn.
- **HOWRY-BERG STEEL & IRON WORKS**, 1366 W. Oxford, Denver Colorado
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa

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# DIRECTORY

- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- JOY MANUFACTURING CO., Oliver Bldg., Pittsburgh 22, Pa.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- E. F. MARSH ENGR. CO., 4324 W. Clayton Ave., St. Louis 10, Mo.
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.
- ROGERS IRON WORKS CO., Joplin, Mo.
- SMITH ENGINEERING WORKS, 532 E. Capitol Dr., Milwaukee 12, Wis.
- THE STANDARD METAL MFG. CO., 110 Center St., Malinta, Ohio
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.
- TRANSALL INCORPORATED, 109 N. 11th St., Birmingham 4, Ala.
- TRIANGLE ENGINEERING CO., 538 Broadway, Chester, Ind.
- UNIVERSAL ENGINEERING CORP., 625 C. Ave. N.W., Cedar Rapids, Iowa
- WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio

## CONVEYORS, Materials Handling

1. Aerial
  2. Air
  3. Apron
  4. Belt
  5. Belt, Portable
  6. Drag
  7. Overhead Bridge
  8. Pan
  9. Screw
  10. Vibrating
  11. Weight Recording
- AJAX FLEXIBLE COUPLING CO., INC., Westfield, N.Y. 8-10
  - THE AMERICAN RUBBER MFG. CO., 1145 Park Avenue, Oakland 8, Calif.
  - ATLAS CONVEYOR CO., Clintonville, Wisconsin
  - BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio 4-5
  - BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill. 3-4-5-6
  - BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill. 4-5-6-9
  - BEAUMONT BIRCH CO., 1505 Race St., Philadelphia 2, Pa. 3-4-6-9-10-11
  - BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif. 3-4-6-8
  - BONDED SCALE AND MACHINE CO., 2176 S. Third St., Columbus 7, Ohio 4-5-6
  - BROOKS EQUIPMENT & MFG. CO., 2018 Davenport Road S.E., Knoxville 8, Tenn. 5
  - BUTLER BIN CO., 945 Blackstone Ave., Waukegan, Wisc. 4-9
  - CARRIER CONVEYOR CORP., 2144 Frankfort Avenue, Louisville 6, Ky. 18
  - CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wisc. 3-4-6-8
  - THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado 3
  - COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington 4

- COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1315 N. Branch St., Chicago 22, Ill. 2
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo. 4-5-9
- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala. 3-4-5-9-10
- DENVER EQUIPMENT CO., 1400 17th St., P.O. Box 3268, Denver 17, Colo. 3
- DIAMOND IRON WORKS, DIV. GOODMAN MANUFACTURING CO., 4838 S. Halsted, Chicago, Ill. 3-4-5
- EAGLE CRUSHER CO., INC., 1000 Harding Way East, Galion, Ohio 3-4
- J. B. EHRSAM & SONS MFG. CO., Enterprise, Kansas
- THE FAHRALLOY CO., 150th & Lexington Aves., Harvey, Ill. 6
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio 3-4-5-6-7-9-11
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa. 3-4-5-6-7-8-9
- A. B. FARQUHAR CO., (Conveyor Div.), 142 N. Duke St., York, Penn. 4
- FLEXOVEYOR MFG. CO., 1220 S. Acama St., Denver 19, Colo. 4
- FULLER CO., Catasauqua, Pa. 1-2
- GENERAL ENGINES CO., INC., 307 Hunter St., Gloucester City, N. J. 4
- HACK ENGINEERING CO., 124 Wozsee Market, Denver, Colorado
- GRO HAIS MFG. CO., INC., Div. Pettibone Mulliken Corp., 350 Fifth Ave., New York 1, N.Y. 3-4-5-6
- HARDINGE CO., INC., 240 Arch St., York, Pa. 2
- HERCULES STEEL PROD. CORP., Sherman Street, Galion, Ohio 5
- HEWITT-ROBINS INC., 666 Glenbrook Road, Stamford, Conn. 4-5-10
- HOWRY-BERG STEEL & IRON WORKS, 1365 W. Oxford, Denver, Colorado
- HUBER-WARCO CO., Marion, Ohio 4
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa 3-4-5
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio 3-4-6-9-10-11
- C. S. JOHNSON CO., P.O. Box 71, Champaign, Ill. 1-9-11
- JOHNSON & HOEHLER, INC., P.O. Box 102, Lansdowne, Pa. 4
- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa. 4
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y. 3-4-5-6-7-8-9-10-11
- KOLMAN MFG. CO., West 12th St. Rd., Sioux Falls, S. D. 4-5
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill. 1-3-4-6-7-8-9-10
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis. 3-4-5-6-8-9-10-11
- MANHEIM MFG. & BELTING CO., Mannheim, Penna.
- E. F. MARSH ENGR. CO., 4324 W. Clayton Ave., St. Louis 10, Mo. 3-4-5-7-11

- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo. 4-5-9
- McLANAHAN & STONE CORP., Wall & Jackson Sts., Hollidaysburg, Pa. 4-9
- MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Illinois 2-4-5-6-7-8
- MERRICK SCALE MFG. CO., Summit 11, Passaic, N. J. 11
- NAYLOR PIPE CO., 1237 E. 92nd St., Chicago 19, Ill.
- NOBLE CO., 1860-7th St., Oakland 20, Calif. 4
- THE OLIVER CORP., A. B. FARQUHAR DIV., York, Pa. 4-5-6
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn. 3-4-5-8
- PIONEER RUBBER MILLS, 520 Fourth St., San Francisco 11, Calif. 4-5
- POWER CURVE CONVEYOR CO., 2185 Jason St., Denver, Colorado
- PRASCHAK MACHINE CO., Marshfield, Wis. 4
- QUAKER RUBBER CORP., Div. of H. K. Porter Co., Inc., Tacony & Colmy Sts., Philadelphia 24, Pa. 4-5
- REES BLOW PIPE MFG. CO., 340 Seventh St., San Francisco 3, Calif. 2-4-6
- ROGERS IRON WORKS CO., Joplin, Mo. 3-4-5
- SAUERMAN BROS., INC., 620 S. 28th Ave., Bellwood, Illinois 6
- SIMPLICITY ENGINEERING CO., 1939 Ralph St., Durand, Mich. 8-10
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y. 2-10
- SMITH ENGINEERING WORKS, 532 East Capitol Dr., Milwaukee 12, Wis. 3-4
- SPROUT WALDRON & CO., INC., Muncy, Pa. 3-4-6-9
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill. 3-4-6-7-8-9-10-11
- ST. REGIS PAPER CO., 230 Park Ave., New York 17, N.Y. 4-6-10-11
- SYNTRON COMPANY, 490 Lexington Ave., Homer City, Pa. 10
- TRANSALL INCORPORATED, 109 N. 11th St., Birmingham 4, Ala. 4
- TRIANGLE ENGINEERING CO., 538 Broadway, Chester, Ind. 3-4-5-6-9
- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y. 4
- UNIVERSAL ENGINEERING CORP., 625 C. Ave. N.W., Cedar Rapids, Iowa 3-4-5
- UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y. 3-4
- VACU-BLAST CO., Bragato Road, Belmont, Calif. 2
- VIBRO-PLUS PRODUCTS, INC., 54-11 Queens Blvd., Woodside 77, N.Y. 18
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y. 3-4-9
- WEBSTER MFG. CO., 1100 West Davis St., Tiffin, Ohio 3-4-6-8-9

- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif. 4
- WILLARD CONCRETE MACHINERY CO., LTD., 11700 Wright Rd., Lynwood, Calif. 1-4
- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 8, Mo. 2-9
- WITTEMANN MACHINERY CO., Farmingdale, N. J. 4
- ZEIDLER CONCRETE PRODUCTS MACHINERY CO., Newell & Mobile St., Waterloo, Iowa 4-6

## COOLERS, Bulk Cement

- FULLER CO., Catasauqua, Pa.
- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- McDERMOTT BROS. CO., Third & Washington Sts., Allentown, Pa.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.
- TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.
- WESTERN PRECIPITATION CORP., 1016 W. Ninth St., Los Angeles 13, Calif.

## COOLERS, Cement Clinker (see Clinker Coolers)

## CORRECTING, BASINS, Slurry

- DORR-OLIVER, INC., Barry Place, Stamford, Conn.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.

## COUPLINGS, Hose (see Hose Fittings)

## COUPLINGS, Pipe

- BLACK BROS., 503 4th Ave., Mendota, Ill.
- CONTINENTAL GIN CO., 4900 5th Ave. South, Birmingham, Alabama
- L. B. FOSTER CO., P. O. Box 1647, Pittsburgh 30, Pa.
- MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Illinois

## COUPLINGS, Shaft, Flexible Shaft (see Drives)

## CRANE, Boom, Cable Stabilizer, Traveling

- BEDFORD FOUNDRY & MACHINE CO., 1000 5th Ave., Bedford, Ind.
- HARNISCHFEGER CORP., 400 West National Ave., Milwaukee 46, Wis.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- NOBLE COMPANY, 1860 Seventh St., Oakland 20, Calif.
- "QUICK-WAY" TRUCK SHOVEL CO., 4150 Josephine St., Denver, Colo.
- WHITING CORP., 139th & Lathrop, Harvey, Ill.

## CRANES, Crawler

1. Diesel
  2. Electric
  3. Gasoline
- AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn. 1-2-3
  - BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio 1-2-3
  - BAY CITY SHOVELS, INC., Bay City, Michigan 1-2-3

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# DIRECTORY

- **BUCRUS-ERIE CO.**, South Milwaukee, Wisc.  
1-2-3
- **CLARK EQUIPMENT CO.**, Construction Machinery Div., P.O. Box 599, Benton Harbor, Michigan  
1-3
- **GAR WOOD INDUSTRIES, INC.**, Findlay, Ohio and Wayne, Mich.  
3
- **HANSON CLUTCH & MACHINE CO.**, 2000 Miami St., Tiffin, Ohio  
1-3
- **HARNISCHFEGER CORP.**, 4400 W. National Ave., Milwaukee 46, Wisc.  
1-2-3
- **HYSTER COMPANY**, 2918 N.E. Clackamas St., Portland 8, Ore.  
1
- **INSLEY MFG. CORP.**, 801 N. Olney St., Indianapolis 6, Ind.  
1-2-3
- **INTERNATIONAL HARVESTER CO.**, 180 N. Michigan Ave., Chicago 1, Ill.  
3
- **KOEHRING COMPANY**, 3026 W. Concordia Ave., Milwaukee 16, Wisc.  
1-2-3
- **LINK-BELT SPEEDER CORP.**, 307 N. Michigan Ave., Chicago, Illinois  
1-2-3
- **LITTLE GIANT CRANE & SHOVEL, INC.**, East 16th & Howard Drive, Des Moines 13, Iowa  
1-2-3
- **MANITOWOC ENGINEERING CORP.**, Manitowoc, Wisc.  
1-3
- **MARION POWER SHOVEL CO.**, 617 W. Center St., Marion, Ohio  
1-2-3
- **NORTHWEST ENGINEERING CO.**, 135 S. LaSalle St., Chicago 3, Ill.  
1-2-3
- **ORTON CRANE & SHOVEL CO.**, 608 S. Dearborn, Chicago, Illinois  
1-2-3
- **OSGOOD-GENERAL, P. O. Box 515**, (Osgood & Cheney Ave.), Marion, Ohio  
1-2-3
- **SCHIED BANTAM CO.**, Park St., Waverly, Iowa  
1-2-3
- **THE THEW SHOVEL CO.**, Lorain, Ohio  
1-2-3
- **UNIT CRANE & SHOVEL CORP.**, 6411 W. Burnham St., Milwaukee 14, Wisc.  
1-2-3
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.  
1-2-3

## CRANES, Locomotive

1. Diesel
2. Electric
3. Gasoline
4. Electric Generator

- **AMERICAN HOIST & DERRICK CO.**, 63 S. Robert St., St. Paul 1, Minn.  
1-2-3-4
- **BAKER-RAULANG CO.**, 1250 West 80th St., Cleveland, Ohio  
2-4
- **COLES CRANES, INC.**, Maen Ave., Joliet, Illinois  
1
- **OHIO LOCOMOTIVE CRANE CO.**, Bucyrus, Ohio  
1-2-3-4
- **ORTON CRANE & SHOVEL CO.**, 608 S. Dearborn, Chicago, Illinois  
1-2-3
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.  
1-2-3-4
- **LOCOMOTIVE CRANE DIV. OF WELLMAN ENGINEERING CO.**, 7000 Central Ave., Cleveland, Ohio  
1-2

## CRANES, Truck-Mounted

- **AMERICAN HOIST & DERRICK CO.**, 63 S. Robert St., St. Paul 1, Minn.

- **BALDWIN-LIMA-HAMILTON CORP.**, Construction Equipment Div., South Main St., Lima, Ohio
- **BAY CITY SHOVELS, INC.**, Bay City, Michigan
- **BUCRUS-ERIE CO.**, South Milwaukee, Wisc.
- **CLARK EQUIPMENT CO.**, Construction Machinery Div., P.O. Box 599, Benton Harbor, Michigan
- **COLES CRANES, INC.**, Maen Ave., Joliet, Ill.
- **GAR WOOD INDUSTRIES, INC.**, Findlay, Ohio and Wayne, Mich.
- **HANSON CLUTCH & MACHINE CO.**, 2000 Miami St., Tiffin, Ohio
- **HARNISCHFEGER CORP.**, 4400 W. National Ave., Milwaukee 46, Wisc.
- **HYSTER CO.**, 2918 N.E. Clackamas St., Portland 8, Ore.
- **KOEHRING COMPANY**, 3026 W. Concordia Ave., Milwaukee 16, Wisc.
- **LINK-BELT SPEEDER CORP.**, 307 N. Michigan Ave., Chicago, Illinois
- **LITTLE GIANT CRANE & SHOVEL, INC.**, East 16th & Howard Drive, Des Moines 13, Iowa
- **NORTHWEST ENGINEERING CO.**, 135 S. LaSalle St., Chicago 3, Ill.
- **OSGOOD-GENERAL, P. O. Box 515**, (Osgood & Cheney Ave.), Marion, Ohio
- **PATTERSON FOUNDRY & MACHINE CO.**, East Liverpool, Ohio
- **PETTIBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.
- **"QUICK-WAY" TRUCK SHOVEL CO.**, 4150 Josephine St., Denver, Colo.
- **SCHIED BANTAM CO.**, Park St., Waverly, Iowa
- **THE THEW SHOVEL CO.**, Lorain, Ohio
- **TRACTOR & EQUIPMENT CO.**, 10000 S. Ridgeland Ave., Oak Lawn, Ill.
- **UNIT CRANE & SHOVEL CORP.**, 6411 W. Burnham St., Milwaukee 14, Wisc.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.

## CRANES, Hammer Head, Ship, etc.

- **AMERICAN HOIST & DERRICK CO.**, 63 S. Robert St., St. Paul 1, Minn.
- **NORTHWEST ENGINEERING CO.**, 135 S. LaSalle St., Chicago 3, Ill.
- **ORTON CRANE & SHOVEL CO.**, 608 S. Dearborn, Chicago, Illinois
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.
- **WELLMAN ENGINEERING CO.**, 7000 Central Ave., Cleveland 4, Ohio

## CRIMPERS, BLASTING CAP (see Blasting Supplies)

## CRUSHERS

1. Gyratory
2. Hammer
3. Impact
4. Jaw
5. Laboratory
6. Ring-Roll
7. Roll
8. Rotary

- **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc.  
1-2-3-4-5-7
- **AMERICAN BRAKE SHOE COMPANY**, 230 Park Avenue, New York 17, New York  
1-2-3-4-7
- **AMERICAN PULVERIZER COMPANY**, 1245 Macklind Avenue, St. Louis 10, Missouri  
2-6
- **AUSTIN-WESTERN DIV., BALDWIN-LIMA-HAMILTON CORP.**, Lima, Ohio  
4

- **BACON-PIETSCHE CO., INC.**, 73 North Maple Avenue, Ridgewood, N.J.  
4-5
- **BALDWIN-LIMA-HAMILTON CORP.**, Crusher Sales Div., Philadelphia 42, Pa.  
1-3-4
- **BIRDSBORO STEEL FOUNDRY & MACHINE COMPANY**, Birdsboro, Penna.  
4-5-7
- **BONDED SCALE AND MACHINE CO.**, 2176 S. Third St., Columbus 7, Ohio  
7
- **DENVER EQUIPMENT CO.**, 1400 17th Street, P.O. Box 3268, Denver 17, Colo.  
4-5-7
- **DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO.**, 4838 S. Halsted, Chicago, Illinois  
2-4-7
- **EAGLE CRUSHER CO., INC.**, 1000 Harding Way East, Gallion, Ohio  
2-3-4
- **J. B. EHRSAM & SONS MFG. CO.**, Enterprise, Kansas  
7
- **THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio  
2
- **FARREL-BACON**, Ansonia, Conn.  
4
- **THE GALLIGHER CO.**, 545 W. 8th South St., Salt Lake City 4, Utah  
8
- **GILSON BROTHERS CO.**, Fredonia, Wisc.  
2
- **GRUENDLER CRUSHER & PULV. CO.**, 2915 N. Market St., St. Louis 6, Mo.  
2-3-4-5-6-7
- **HAMMERMILLS, INC.**, (Subsidiary of Pettibone Mulliken Corp.), 639 C Ave., West, Cedar Rapids, Iowa  
2
- **W. P. HEINEKEN, INC.**, 50 Broad St., New York 3, N.Y.  
1-2-3-4-5-6-7
- **HUBER-WARCO**, Marion, Ohio  
7
- **INTERNATIONAL HARVESTER CO.**, 180 N. Michigan Ave., Chicago 1, Ill.  
2
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa  
2-3-4-7
- **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio  
2-3-6-7
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.  
1-2-3-4-5-6-7
- **LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wisc.  
1-2-4-7
- **McLANAHAN & STONE CORP.**, McLANahan Bldg., Hollidaysburg, Pa.  
4-7
- **McNALLY PITTSBURG MFG. CORP.**, W. Third St., Pittsburgh, Kan.  
6-7
- **MILLER EQUIPMENT CO., INC.**, P. O. Box 1566, Salisbury, Mo. Car.  
2-7
- **THE MINE & SMELTER SUPPLY CO.**, 17th & Blake, Denver 17, Colo.  
3
- **NORDBERG MFG. CO.**, 3073 S. Chase Ave., Milwaukee 1, Wisc.  
1
- **PATERSON FOUNDRY & MACHINE CO.**, 41 Helene St., East Liverpool, Ohio  
7
- **PENNSYLVANIA CRUSHER DIV., BATH IRON WORKS**, 1710 Liberty Trust Bldg., Philadelphia 7, Pa.  
1-2-3-4-5-6-7
- **PIONEER ENGINEERING WORKS, INC.**, 1515 Central Ave. N.E., Minneapolis 13, Minn.  
4-7

- **PRASCHAK MACHINE CO.**, Marshfield, Wis.  
8
- **ROGERS IRON WORKS CO.**, Joplin, Mo.  
2-4-7
- **SMITH ENGINEERING WORKS**, 332 East Capital Dr., Milwaukee 12, Wisc.  
1-2-3-4-5-6-7
- **SPROUT WALDRON & CO., INC.**, Muncy, Pa.  
5-5
- **STEPHENS-ADAMSON MFG. CO.**, Ridgeway Ave., Aurora, Ill.  
6
- **STRAUB MFG. CO., INC.**, 8383 Baldwin St., Oakland 20, Calif.  
1-6-5
- **STURTEVANT MILL CO.**, 102 Clayton St., Dorchester, Boston 22, Mass.  
2-4-5-6-7
- **TRAYLOR ENGINEERING & MFG. CO.**, Allentown, Pa.  
1-4-7
- **UNIVERSAL ENGINEERING CORP.**, 625 C Ave. N.W., Cedar Rapids, Iowa  
2-3-4-5-7
- **UNIVERSAL ROAD MACHINERY CO.**, 27 Emerick St., Kingston, N.Y.  
4
- **WALDRUP ENGINEERING CO.**, 11810 Center St., Hollidaysburg, Calif.  
8
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.  
1-2-3-4-5-6-7
- **THE WEBB CORP.**, Webb City, Mo.  
4
- **WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC.**, 813 Montgomery St., St. Louis 6, Mo.  
2-3-5-6-7

## CRUSHING AND SCREENING PLANTS, Complete

- **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc.
- **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio
- **AUSTIN-WESTERN DIV., BALDWIN-LIMA-HAMILTON CORP.**, Lima, Ohio
- **BALDWIN-LIMA-HAMILTON CORP.**, Construction Equipment Div., South Main St., Lima, Ohio
- **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.
- **BONDED SCALE AND MACHINE CO.**, 2193 S. Third St., Columbus 7, Ohio
- **DENVER EQUIPMENT CO.**, 1400 17th St., P.O. Box 3268, Denver 17, Colo.
- **DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO.**, 4838 S. Halsted, Chicago, Illinois
- **EAGLE CRUSHER CO., INC.**, 1000 Harding Way East, Gallion, Ohio
- **FARREL-BACON**, Ansonia, Conn.
- **GRUENDLER CRUSHER & PULV. CO.**, 2915 N. Market St., St. Louis 6, Mo.
- **W. P. HEINEKEN, INC.**, 50 Broad St., New York 3, N.Y.
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **KOLMAN MANUFACTURING CO.**, West Twelfth S. Road, Sioux Falls, South Dakota
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.
- **LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wisc.
- **E. F. MARSH ENG. CO.**, 4324 W. Clayton Ave., St. Louis 10, Mo.
- **McLANAHAN & STONE CORP.**, McLANahan Bldg., Hollidaysburg, Pa.
- **McNALLY PITTSBURG MFG. CORP.**, W. Third St., Pittsburgh, Kan.

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# DIRECTORY

• MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.  
 • THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

• PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.  
 • ROGERS IRON WORKS CO., Joplin, Mo.

• SMITH ENGINEERING WORKS, 532 East Capitol Dr., Milwaukee 12, Wis.

• STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.  
 • STRAUS MFG. CO., INC., 8383 Baldwin St., Oakland 20, Calif.

• UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa

• UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo.

## CRUSHING AND SCREENING PLANTS, Mobile Mounted

• BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio  
 • BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

• BONDED SCALE AND MACHINE CO., 2176 S. Third St., Columbus 7, Ohio

• DIAMOND IRON WORKS DIV. GOODMAN MFG. CO., 4838 S. Halsted, Chicago, Ill.

• EAGLE CRUSHER CO., INC., 1000 Harding Way East, Galien, Ohio

• GRUNDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.

• IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

• LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

• PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.

• ROGERS IRON WORKS CO., Joplin, Mo.

• SMITH ENGINEERING WORKS, 532 East Capitol Dr., Milwaukee 12, Wis.

• SEPARATOR DIV. SOUTHWESTERN ENGINEERING CO., 4800 S. Santa Fe Ave., Los Angeles 58, Calif.

• STRAUSS MFG. CO., INC., 8383 Baldwin, Oakland 20, Calif.

• UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa

• UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo.

## CUPOLAS, Rock Wool (see Rock Wool Cupolas and Equipment)

## CURING COMPOUNDS, Concrete

• AUTOLENE LUBRICANTS CO., PROTEX INDUSTRIAL DIV., 1331 W. Evans, Denver 9, Ohio  
 • DEWEY AND ALMY CHEMICAL CO., Div. of W. R. Grace & Co., 62 Whittemore Ave., Cambridge 40, Mass.

• THE MASTER BUILDERS CO., 7016 Euclid Ave., Cleveland 3, Ohio  
 • SERVICISED PRODUCTS CORP., 6053 West 65th St., Chicago 38, Illinois

• SOLVAY PROCESS DIV. ALLIED CHEMICAL & DYE CORP., 61 Broadway, N. New York 6, N.Y.

## CURING ROOM DOORS

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

• MOORE DRY KILN CO., 1220 W. State St., Jacksonville 1, Fla.

• STANDARD DRY KILN CO., 798 S. Harding, Indianapolis, Ind.

## CURING ROOM HEATERS

• LITTLEFORD BROS., INC., 453 E. Pearl St., Cincinnati 2, Ohio

• PRAT-DANIEL CORP., 2 Meadow St., So. Norwalk, Conn.

## CUTTER-HEADS, Dredging

• EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa

• MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.

• MORRIS MACHINE WORKS, 20 E. Genesee St., Baldwinville, N.Y.

• W. H. PARRER CO., 211 W. Wacker Drive, Chicago, Illinois

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N. J.

## CUTTERS, Fuse (see Blast- ing Supplies)

## CUTTING WHEELS, Abrasive for Concrete

• CLIPPER MFG. CO., 2800 Warwick, Kansas City 8, Mo.

• CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

• RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 92 Townsend St., Passaic, N. J.

• SIMONDS ABRASIVE CO., Tacony & Fraley Sts., Philadelphia 37, Pa.

## D

## DEHYDRATORS (see Slurry Thickeners)

## DERRICKS, Barge

• AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.

• DRAGO CORP., Drago Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

## DERRICKS, Stiff-Leg and Guy

• AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.

• DRAGO CORP., Drago Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.

• R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

## DETONATORS (see Blast- ing Supplies)

## DEWATERING EQUIPMENT, Sand (see Sand Recovery Machinery)

## DIAMOND DRILLING MACHINES

• SPRAGUE & HENWOOD, INC., 221 W. Olive St., Scranton 2, Pa.

## DIAPHRAGMS, Pumps, Rubber

• A & A MFG. CO., 2017 W. Clybourn St., Milwaukee 3, Wisc.

• CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.

• DENVER EQUIPMENT CO., 1400 17th St., P. O. Box 5268, Denver 17, Colo.

• GOODALL RUBBER CO., 403 Whitehead Road, Trenton 4, N. J.

• THE JAEGER MACHINE CO., 550 W. Spring St., Columbus 16, Ohio

• REPUBLIC RUBBER DIV., Los Rubber & Tire Corp., Albert Street, Youngstown 1, Ohio

• RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 92 Townsend St., Passaic, N. J.

• UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

• WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.

## DIESEL ENGINES, Auto- motive

• THE BUDA DIV. ALLIS-CHALMERS MFG. CO., 154th & Commercial Aves., Harvey, Illinois

• CUMMINS ENGINE CO., INC., 5th & Union Sts., Columbus, Ind.

• GENERAL MOTORS CORP., DETROIT DIESEL DIV., 13400 W. Outer Drive, Detroit 28, Mich.

• INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.

• MACK TRUCKS, INC., Empire State Bldg., New York 1, New York

## DIESEL ENGINES, Station- ary

1. Less than 100 H.P.  
 2. 100-500 H.P.  
 3. 500-1000 H.P.  
 4. Over 1000 H.P.

• BALDWIN-LIMA-HAMILTON CORP., Eddystone Div., Philadelphia 42, Pa.

• THE BUDA DIV. ALLIS-CHALMERS MFG. CO., 154th Commercial Ave., Harvey, Illinois

• CATERPILLAR TRACTOR CO., Peoria 8, Ill.

• CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.

• CUMMINS ENGINE CO., INC., 5th & Union Sts., Columbus, Ind.

• GENERAL MOTORS CORP., DETROIT DIESEL ENGINE DIV., 13400 W. Outer Drive, Detroit 28, Mich.

• HARNISCHFEGER CORP., 4400 W. National Ave., Milwaukee 46, Wisc.

• INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.

• INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.

• MINNEAPOLIS-MOLINE CO., 2864 Minnehaden, Minneapolis, Minn.

• MURPHY DIESEL CO., 5317 West Burnham St., Milwaukee 14, Wis.

• NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wisc.

• PAGE ENGR. CO., Clearing Office, Chicago 38, Ill.

• DIPPER TEETH AND PARTS (see Bucket Lips & Teeth)

## DIPPERS, Dredge & Shovel (see Buckets)

## DITCHING MACHINES

• BARBER-GREENE COMPANY, 400 N. Highland Avenue, Aurora, Ill.

## DRAFT GAUGES

• BAILEY METER CO., 1050 Ivanhoe Road, Cleveland 10, Ohio

## DRAGLINE CABLEWAY EXCAVATORS

• HARNISCHFEGER CORP., 4400 W. National Ave., Milwaukee, Wisc.

• SAUERMAN BROS., INC., 620 S. 28th Ave., Bellwood, Illinois

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

## DRAG LINES, Crawler

1. Diesel  
 2. Electric  
 3. Gasoline

• AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.

• BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio

• BAY CITY SHOVELS, INC., Bay City, Michigan

• CLARK EQUIPMENT CO., CONSTRUCTION MACHINERY DIV., P.O. Box 599, Benton Harbor, Michigan

• GAR WOOD INDUSTRIES, INC., Findlay, Ohio and Wayne, Mich.

• HARNISCHFEGER CORP., 4400 W. National Ave., Milwaukee 46, Wisc.

• KOEHRING COMPANY, 3026 W. Concordia Ave., Milwaukee 16, Wisc.

• LINK-BELT SPEEDER CORP., 307 N. Michigan Ave., Chicago, Illinois

• LITTLE GIANT CRANE & SHOVEL, INC., East 16th & Howard Drive, Des Moines 13, Iowa

• MANITOWOC ENGINEERING CORP., 16th & River Sts., Manitowoc, Wis.

• MARION POWER SHOVEL CO., 617 W. Center St., Marion, Ohio

• NORTHWEST ENGINEERING CO., 133 S. LaSalle St., Chicago 3, Ill.

• ORTON CRANE & SHOVEL CO., 608 S. Dearborn, Chicago, Illinois

• OSGOOD-GENERAL, P.O. Box 515, (Osage & Cheney Aves.), Marion, Ohio

• SCHIED BANTAM CO., Park St., Waverly, Iowa

• RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

## DRAGLINES, Truck Mounted

• AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.

• BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio

• BAY CITY SHOVELS, INC., Bay City, Michigan

• CLARK EQUIPMENT CO., CONSTRUCTION MACHINERY DIV., P.O. Box 599, Benton Harbor, Michigan

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**INSLEY MFG. CO.**, 801 N. Olney St., Indianapolis 6, Ind.  
**LINK-BELT SPEEDER CORP.**, 307 N. Michigan Ave., Chicago, Illinois  
**LITTLE GIANT CRANE & SHOVEL, INC.**, East 16th & Howard Drive, Des Moines 13, Iowa  
**NORTHWEST ENGINEERING CO.**, 135 S. LaSalle St., Chicago 3, Ill.  
**OSGOOD-GENERAL, P.O.**, Box 515, (Osgood & Cheney Ave.), Marion, Ohio  
**"QUICK-WAY" TRUCK SHOVEL CO.**, 4150 Josephine St., Denver, Colo.  
**SCHILD BANTAM CO.**, Park St., Waverly, Iowa  
**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.

## DRAGLINES, Walking

1. Diesel
2. Electric
3. Gasoline
4. Electric Generator

**HANSON CLUTCH & MACHINE CO.**, 2000 Miami St., Tiffin, Ohio 1-3  
**HARNISCHFEGGER CORP.**, 4000 W. National Ave., Milwaukee, Wisc. 1-2-3  
**MARION POWER SHOVEL CO.**, 617 W. Center St., Marion, Ohio 1-2-4  
**PAGE ENGR. CO.**, Clearing Post Office, Chicago 38, Ill. 1-2  
**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y. 1-2-3

## DRAGS, Sand (see Sand Recovery Machinery)

## DREDGE HOISTS

**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.

## DREDGE PIPE AND FITTINGS

**AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.  
**MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.

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**AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.  
**THE AMERICAN RUBBER MANUFACTURING COMPANY**, 1145 Park Avenue, Oakland 8, California  
**CARLYLE RUBBER CO., INC.**, 62 Park Place, New York 7, N.Y.  
**GOODALL RUBBER CO.**, 403 Whitehead Road, Trenton 4, N.J.  
**MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois  
**RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV.**, 92 Townsend St., Passaic, N.J.  
**UNITED STATES RUBBER CO.**, 1230 Ave. of the Americas, New York 20, N.Y.

## DREDGE PUMPS (see Pumps, Dredge)

## DREDGES, Sand & Gravel

1. Bucket
2. Ladder
3. Pump

**AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill. 1-3

**BIRDSBORO STEEL FOUNDRY & MACHINE COMPANY**, Birdsboro, Penn.

**BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.

**DRAVO CORP.**, Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa. 1-2-3

**EAGLE IRON WORKS**, 137 Holcomb Ave., Des Moines 4, Iowa 2-3

**MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill. 2-3

**MORRIS MACHINE WORKS**, 20 E. Genesee St., Baldwinville, N.Y. 3

**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y. 1-2-3

**YUBA MFG. CO.**, 351 California St., San Francisco 4, Calif. 1-2

## DRIFTERS

**CHICAGO PNEUMATIC TOOL CO.**, 6 E. 44th St., New York 17, N.Y.  
**GARDNER-DENVER CO.**, Quincy, Ill.  
**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
**JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
**THOR POWER TOOL CO.**, 175 N. State St., Aurora, Ill.  
**WORTHINGTON CORP.**, 426 Washington Ave., Harrison, N. J.

## DRILL BITS (see Bits)

## DRILL STEEL

**BETHLEHEM STEEL CO.**, Third Street, Bethlehem, Pa.  
**BRUNNER & LAY, INC.**, 9300 King Street, Franklin Park, Ill.  
**CHICAGO PNEUMATIC TOOL CO.**, 6 E. 44th St., New York 17, N.Y.  
**GARDNER-DENVER CO.**, Quincy, Ill.  
**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
**JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
**SCHRAMM, INC.**, West Chester, Pa.

## DRILLING ACCESSORIES

**BRUNNER & LAY, INC.**, 9300 King Street, Franklin Park, Illinois  
**CHICAGO PNEUMATIC TOOL CO.**, 6 E. 44th St., New York 17, N.Y.  
**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
**SANDERSON-CYCLONE DRILL CO.**, 157 S. Main St., Orrville, Ohio  
**SPANG & COMPANY**, 143 Etna St., Butler, Pa.  
**SPRAGUE & HENWOOD, INC.**, 221 W. Olive St., Scranton 2, Pa.  
**STRAUS MFG. CO., INC.**, 8383 Baldwin St., Oakland 20, Calif.  
**SUPERIOR PNEUMATIC & MFG. CO. INC.**, 4758 Warner Road, Cleveland 25, Ohio

## DRILLS, Core

**CARDOX CORP.**, 307 N. Michigan Ave., Chicago 1, Illinois  
**CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York 17, N.Y.  
**HOFFMAN BROS. DRILLING CO.**, 118 County National Bank Bldg., Punxsutawney, Pa.  
**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
**JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
**PENNSYLVANIA DRILLING CO.**, 1201 Chartiers Ave., Pittsburgh 20, Pa.  
**SPRAGUE & HENWOOD, INC.**, 221 W. Olive St., Scranton 2, Pa.

## DRILLS, Rock

1. Electric
2. Gasoline
3. Pneumatic
4. Jet Piercing

**CARDOX CORP.**, 307 N. Michigan Ave., Chicago 1, Illinois 1-2

**CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York 17, N.Y. 1-2-3

**COPCO PACIFIC CO.**, 930 Britton Ave., San Carlos, Calif. 4

**EUGENE ENGINEERING CO.**, 1485 West 1st St., Eugene, Ore. 1-2

**GARDNER-DENVER CO.**, Quincy, Ill. 3

**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y. 3

**JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa. 3

**LEROI COMPANY**, 1706 S. 68th St., Milwaukee 14, Wisc. 3

**THE SALEM TOOL CO.**, 767 S. Ellsworth Ave., Salem, Ohio 1-2

**SANDERSON-CYCLONE DRILL CO.**, 157 S. Main St., Orrville, Ohio 1-2

**SCHRAMM, INC.**, West Chester, Pa. 3

**SYNTRON COMPANY**, 450 Lexington Ave., Homer City, Pa. 1-2

**THOR POWER TOOL CO.**, 175 N. State St., Aurora, Ill. 3

**THE TRAVEL DRILL CO.**, 218 Bryan Bldg., P.O. Box 1124, Raleigh, N.C. 2

**WORTHINGTON CORP.**, 426 Washington Blvd., Harrison, N. J. 3

## DRILLS, Stoper

**CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York 17, N.Y.  
**GARDNER-DENVER CO.**, Quincy, Ill.  
**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
**JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
**LEROI COMPANY**, 1706 S. 68th St., Milwaukee 14, Wisc.  
**THOR POWER TOOL CO.**, 175 N. State St., Aurora, Ill.  
**UNITED STATES RUBBER CO.**, 1230 Avenue of the Americas, New York 20, N.Y.  
**WORTHINGTON CORP.**, 426 Washington Blvd., Harrison, N. J.

## DRILLS, Well or Blast-Hole

**BUCRYUS-ERIE CO.**, South Milwaukee, Wisc.  
**CHICAGO PNEUMATIC TOOL CO.**, 6 E. 44th St., New York 17, N.Y.  
**GARDNER-DENVER CO.**, Quincy, Ill.  
**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
**JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
**LEROI CO.**, 1706 S. 68th St., Milwaukee 14, Wisc.  
**E. J. LONGYEAR CO.**, 1700 Foshay Tower, Minneapolis 2, Minn.  
**LOOMIS MACHINE CO.**, Tiffin, Ohio  
**MAYHEW SUPPLY CO., INC.**, 4700 Scenic Rd., Dallas, Texas  
**MOBILE DRILLING, INC.**, 960 N. Pennsylvania Ave., Indianapolis, Indiana  
**REICH BROS. MFG. CO.**, 1439 Ash St., Terre Haute, Indiana  
**SANDERSON CYCLONE DRILL CO.**, 157 S. Main St., Orrville, Ohio

**VAREL TOOL CO.**, 9230 Denton Drive, Dallas, Texas

**WORTHINGTON CORP.**, 426 Washington Blvd., Harrison, N. J.

## DRIVES

1. Chain
2. Flat Belt
3. Flexible Shaft
4. Gear
5. Short Center
6. Variable Speed
7. V-Belt

**AJAX FLEXIBLE COUPLING CO., INC.**, Westfield, N.Y. 3

**ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc. 4-5-6-7

**AMERICAN FLEXIBLE COUPLING**, Pittsburgh Ave., Erie, Pa. 3

**THE AMERICAN PULLEY CO.**, 4200 Wissahickon Ave., Philadelphia 29, Pa. 2-4-5-6-7

**BARBER-GREENE COMPANY**, 400 N. Highland Avenue, Aurora, Ill. 1-4

**BONDED SCALE & MACHINE CO.**, 2176 S. Third St., Columbus, Ohio 1-2-4-6-7

**CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc. 1-3

**THE CLEVELAND WORM AND GEAR COMPANY**, 3249 East 80th Street, Cleveland 4, Ohio 1-2-3-4-5-6-7

**CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala. 3-4-7

**COOK BROS. EQUIPMENT CO.**, 3334 San Fernando Road, Los Angeles 65, Calif. 1

**DODGE MFG. CORP.**, 1952 William St., Mishawaka, Ind. 1-2-3-4-5-6-7

**DYNAMIC CORP.**, 3307 14th Ave., Kenosha, Wis. 6

**J. B. EHRSAM & SONS MFG. CO.**, Enterprise, Kansas 4-6

**F. A. B. MANUFACTURING CO.**, 1249 67th St., Oakland, Calif. 3

**THE FALK CORP.**, 3001 W. Canal St., Milwaukee 8, Wisc. 3-4

**FARREL-BACON**, Ansonia, Conn. 4

**FOOTE BROS. GEAR & MACHINE CORP.**, 4545 S. Western Ave., Chicago, Illinois

**HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn. 1-4

**IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa 6

**THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio 1-3-4

**W. A. JONES FOUNDRY & MACHINE CO.**, 4401 Roosevelt Road, Chicago 24, Ill. 2-4-7

**KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y. 1-2-3-4-5-6-7

**THE LIMA ELECTRIC MOTOR CO.**, 4300 Findlay Road, Lima, Ohio 4-6

**LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill. 1-3-4-5-6-7

**PHILADELPHIA GEAR WORKS, INC.**, O St. below Erie Ave., Philadelphia 34, Pa. 4

**RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV.**, 92 Townsend St., Passaic, N. J. 7

**REEVES PULLEY CO., INC.**, 1225 Seventh St., Columbus, Ind. 6

• A dot before name indicates ROCK PRODUCTS Advertiser

# DIRECTORY

- SMITH ENGINEERING WORKS, 532 E. Capitol Dr., Milwaukee 12, Wis. 1-2-3-4-5-6-7
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill. 1-4-7
- STERLING ELECTRIC MOTORS, INC., 5401 Telegraph Rd., Los Angeles 22, Calif. 4
- TRIANGLE ENGINEERING CO., 528 Broadway, Chester, Ind. 1
- TRUAX MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash. 1
- TWIN DISC CLUTCH CO., Racine, Wis. 4
- U.S. ELECTRICAL MOTORS, INC., 200 E. Slouson Ave., Los Angeles 54, Calif. 4-5
- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y. 2-7
- WEBSTER MFG. CO., 1100 West Davis St., Tiffin, Ohio 3
- T. B. WOODS SONS CO., 8th Ave., Chambersburg, Pa. 2-4-6-7
- WORTHINGTON CORP., 426 Washington Ave., Harrison, N. J. 1

## DROP BALLS

- BIRDSBORO STEEL FOUNDRY & MACHINE COMPANY, Birdsboro, Penn.
- CAPE ANN ANCHOR & FORGE CO., Whittemore St., Gloucester, Mass.
- DIAMOND IRON WORKS, DIV. GOODMAN MANUFACTURING CO., 4838 S. Halsted, Chicago, Ill.
- EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa

## DRY PANS

- EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa
- McLANAHAN & STONE CORP., McLANahan Bldg., Hollidaysburg, Pa.
- McNALLY PITTSBURGH MFG. CORP., W. Third St., Pittsburgh, Kan.

## DRYERS, Rotary, Gravel, Rock, Sand

- BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.
- BETHLEHEM STEEL COMPANY, Third Street, Bethlehem, Penn.
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- DENVER EQUIPMENT CO., 1400 17th St., Denver 17, Colo.
- HARDINGE CO., INC., 240 Arch St., York, Pa.
- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.
- HETHERINGTON & BERNER, INC., 701 Kentucky Ave., Indianapolis 7, Ind.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- JEFFREY MANUFACTURING CO., 933 North 4th St., Columbus 16, Ohio
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- McDERMOTT BROS. CO., Third & Washington Sts., Allentown, Pa.
- McLANAHAN & STONE CORP., McLANahan Bldg., Hollidaysburg, Pa.
- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.
- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis.
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.

- ROGERS IRON WORKS CO., Joplin, Mo.
- STANDARD STEEL CORP., 5036 Boyle Ave., Los Angeles 58, Calif.
- R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.
- TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.
- VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- THE WEBB CORP., Webb City, Mo.

## DRYERS, Plaster Board

- DORR-OLIVER, INC., Barry Place, Stamford, Conn.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

## DRYERS, Steam Coil

- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.
- MOORE DRY KILN CO., 1220 W. State St., Jacksonville 1, Fla.
- SHORE ENGINEERING, 322 Broadway, New York 7, New York
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

## DUMPING MECHANISMS, Truck

- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- THE GALION ALLSTEEL BODY CO., 605 S. Market Street, Galion, Ohio
- GAR WOOD IND., INC., Wayne Div., Wayne, Mich. and Richmond, California
- THE MARION METAL PROD. CO., Cheney Avenue, Marion, Ohio
- ST. PAUL HYDRAULIC HOIST, 2207 University Ave., Minneapolis 14, Minn.

## DUST COLLECTING EQUIPMENT ACCESSORIES

- AMERICAN AIR FILTER CO., INC., 107 Central Ave., Louisville 8, Ky.
- CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, New York
- DRAVO CORP., Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- DUSTEX CORP., 42-27 Francis Lewis Blvd., Buffalo, N.Y.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- THE JOHNSON-MARCH CORP., 1724 Chestnut St., Philadelphia 3, Pa.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- THE KIRK & BLUM MFG. CO., 3120 Farrer St., Cincinnati 9, Ohio
- KOPPERS CO., INC., Koppers Bldg., Pittsburgh, Pennsylvania
- THE NORTHERN BLOWER CO., 6409 Barberton Ave., Cleveland 2, Ohio
- PANGBORN CORP., Pangborn Blvd., Hagerstown, Md.
- THE W. W. SLY MFG. CO., 4700 Train Ave., Cleveland 2, Ohio
- STANDARD STEEL CORP., 5036 Boyle Ave., Los Angeles 58, Calif.
- WHEELABRATOR CORP., 1281 S. Byekit St., Mishawaka, Indiana

## DUST COLLECTORS

1. Bag Type
  2. Cyclone
  3. Electric Precipitators
  4. Hydraulic
  5. Portable
- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis. 1
  - AMERICAN AIR FILTER CO., INC., 107 Central Ave., Louisville 8, Ky. 1-2-3-4-5

- BUELL ENGINEERING CO., 70 Pine Street, New York 5, New York 2-3
- COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1315 N. Branch St., Chicago 22, Ill. 3
- FLY ASH ARRESTOR CORP., P.O. Box 1883, Birmingham, Ala. 2-4
- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y. 2
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa 2-5
- THE JOHNSON-MARCH CORP., 1724 Chestnut St., Philadelphia 3, Pa. 1-2-4-5
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y. 1-2-3-4-5
- THE KIRK & BLUM MFG. CO., 3120 Farrer St., Cincinnati 9, Ohio 2-5
- NATIONAL ENGINEERING CO., 549 W. Washington Blvd., Chicago 6, Illinois 4
- THE NORTHERN BLOWER CO., 6409 Barberton Ave., Cleveland 2, Ohio 1-2-4-5
- PANGBORN CORP., Pangborn Blvd., Hagerstown, Md. 1-2-5
- REES BLOW PIPE MFG. CO., 340 Seventh St., San Francisco 3, Calif. 1-2
- RESEARCH CORP., Bound Brook, N. J. 3
- RESEARCH-COTTRELL, INC., 405 Lexington Ave., New York, N.Y. 3
- THE W. W. SLY MFG. CO., 4700 Train Ave., Cleveland 2, Ohio 1-5
- SPROUT WALDRON & CO., INC., Muncy, Pa. 2
- TURNER & HAWS ENGINEERING CO., INC., 87 Gardner St., West Roxbury 32, Mass. 1-2-5
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y. 1-2
- WESTERN PRECIPITATION CORP., 1016 W. Ninth St., Los Angeles 15, Calif. 1-2-3
- WHEELABRATOR CORP., 1281 S. Byekit St., Mishawaka, Indiana 1
- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo. 1-2

## DUST COLLECTORS, Rock Drill

- AMERICAN AIR FILTER CO., INC., 107 Central Ave., Louisville 8, Ky.
- BUELL ENGINEERING COMPANY, INC., 70 Pine Street, New York 5, New York
- FLY ASH ARRESTOR CORP., P.O. Box 1883, Birmingham, Ala.
- JOHNSON-MARCH CORP., 1724 Chestnut St., Philadelphia, Pa.
- MINE SAFETY APPLIANCES CO., 201 N. Braddock Ave., Pittsburgh 8, Pa.
- THE NORTHERN BLOWER CO., 6409 Barberton Ave., Cleveland 2, Ohio
- TURNER & HAWS ENGINEERING CO., INC., 87 Gardner St., West Roxbury 32, Mass.

## DUST CONTROL

- AQUADYNE CORP., 441 Lexington Ave., New York 17, N.Y.
- JOHNSON-MARCH CORP., 1724 Chestnut St., Philadelphia, Pennsylvania

## DUST SAMPLING AND ANALYZING EQUIPMENT

- BUELL ENGINEERING COMPANY, INC., 70 Pine Street, New York 5, New York
- MINE SAFETY APPLIANCES CO., 201 N. Braddock Ave., Pittsburgh 8, Pa.
- WESTERN PRECIPITATION CORP., 1016 W. Ninth St., Los Angeles 15, Calif.

## DYNAMITE AND BLASTING EXPLOSIVES (see Explosives and Dynamite)

## E

## EARTH MOVING HAUL-AGE EQUIPMENT, Self Loading

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wisconsin
- ALLIS-CHALMERS MFG. CO., Tractor Group, Milwaukee 1, Wisconsin
- CATERPILLAR TRACTOR CO., Peoria 8, Ill.
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- EUCLID DIVISION, GENERAL MOTORS CORP., 1361 Chardon Road, Cleveland 17, Ohio
- GAR WOOD INDUSTRIES, INC., Findlay, Ohio and Wayne, Michigan
- GLEDHILLROAD MACHINERY CO., Galien, Ohio
- THE HEIL COMPANY, 3000 W. Montana St., Milwaukee 1, Wis.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- LE TOURNEAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.
- SAUERMAN BROS., INC., 620 S. 28th Ave., Bellwood, Illinois
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- WOODBRIDGE MFG. CO., Hendy Ave., Sunnyvale, Calif.

## ECONOMIZERS, Waste Heat (see Boilers, Waste Heat)

## ELECTRIC DETECTORS & SEPARATORS

- RADIO CORP. OF AMERICA, Engineering Products Dept., Front & Cooper Sts., Camden 2, N. J.

## ELECTRIC MOTORS

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.
- ELECTRIC MACHINERY MFG. CO., 800 Central Avenue, Minneapolis 13, Minn.
- GENERAL DYNAMICS CORP., ELECTRO DYNAMIC DIV., 162 Ave. A, Bayonne, N. J.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- THE LIMA ELECTRIC MOTOR CO., 4300 Findlay Road, Lima, Ohio
- STERLING ELECTRIC MOTORS, INC., 5401 Telegraph Rd., Los Angeles 22, Calif.
- U. S. ELECTRICAL MOTORS, INC., 200 E. Slouson Ave., Los Angeles 54, Calif.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

## ELECTRIC SWITCH GEAR

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

• A dot before name indicates ROCK PRODUCTS Advertiser

# DIRECTORY

**ELECTRIC MACHINERY MFG. CO.**, 800 Central Avenue, Minneapolis 13, Minn.

• **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.  
**WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## ELECTRIC TRANSFORMERS

• **ALLIS-CHALMERS MFG. CO.**, 975 S. 70th St., Milwaukee 1, Wis.  
 • **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.  
**F. R. HANNON & SONS**, 1605 Waynesburg Road S.E., Canton 7, Ohio  
**WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## ELECTRIC EQUIPMENT AND SUPPLIES

• **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.  
**WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## ELECTRODES, WELDING (see Welding Rods and Electrodes)

## ELEVATORS, Chain or Belt & Bucket

**ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio  
 • **BALDWIN-LIMA-HAMILTON CORP.**, Construction Equipment Div., South Main St., Lima, Ohio  
 • **BAUGHMAN MFG. CO., INC.**, Shipman Road, Jerseyville, Ill.  
**BEAUMONT BIRCH CO.**, 1505 Race St., Philadelphia 2, Pa.  
**BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.  
**BONDED SCALE AND MACHINE CO.**, 2176 S. Third St., Columbus 7, Ohio

• **L. BURMEISTER CO.**, 4535 W. Mitchell St., Milwaukee 14, Wisc.  
 • **BUTLER BIN CO.**, 945 Blackstone Ave., Waukesha, Wisc.  
 • **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.  
 • **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.  
 • **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.  
 • **DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO.**, 4838 S. Halsted, Chicago, Illinois  
 • **EAGLE CRUSHER CO., INC.**, 1000 Harding Way East, Galion, Ohio  
**THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio

• **FANNING SCHUETT ENGINEERING CO.**, 4325 N. Third Street, Philadelphia 40, Pa.

• **FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.

• **GRUENDLER CRUSHER & PULV. CO.**, 2915 N. Market St., St. Louis 6, Mo.

**HACK ENGINEERING CO.**, 124 Wazee Market, Denver 2, Colorado

• **HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn.

• **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa

• **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio

• **C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.**

**JOHNSON & HOEHLER, INC., P. O. Box 102, Lansdowne, Pa.**

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.

• **THE KENT MACHINE CO.**, Cuyahoga Falls, Ohio

• **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.

• **LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wis.

• **E. F. MARSH ENGR. CO.**, 4324 W. Clayton Ave., St. Louis 10, Mo.

• **MATERIAL HANDLING INC.**, 4985 Fyler Ave., St. Louis 9, Mo.

• **McLANAHAN & STONE CORP.**, McLANahan Bldg., Hollidaysburg, Pa.

• **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.

• **PIONEER ENGINEERING WORKS, INC.**, 1515 Central Ave. N.E., Minneapolis 13, Minn.

• **REES BLOW PIPE MFG. CO.**, 340 Seventh St., San Francisco 3, Calif.

• **ROGERS IRON WORKS CO.**, Joplin, Mo.

• **SMITH ENGINEERING WORKS**, 532 East Capitol Dr., Milwaukee 12, Wis.

**SPROUT WALDRON & CO., INC.**, Muncy, Pa.

• **STEPHENS-ADAMSON MFG. CO.**, Ridgeway Ave., Aurora, Ill.

• **STRAUB MFG. CO., INC.**, 8383 Baldwin, Oakland 10, Calif.

• **STURTEVANT MILL COMPANY**, 102 Clayton St., Dorchester, Boston 22, Mass.

**TRIANGLE ENGINEERING CO.**, 538 Broadway, Chesterton, Indiana

• **UNITED STATES RUBBER CO.**, 1230 Ave. of the Americas, New York 20, N.Y.

• **UNIVERSAL ENGINEERING CORP.**, 625 C Ave. N.W., Cedar Rapids, Iowa

• **UNIVERSAL ROAD MACHINERY CO.**, 27 Emerick St., Kingston, N.Y.

• **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio

• **WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC.**, 813 Montgomery St., St. Louis 6, Mo.

• **WITTMANN MACHINERY CO.**, Farmingdale, N. J.

## ELEVATORS, Bulk Cement

**AMERICAN HOIST AND DERRICK COMPANY**, 63 South Robert St., St. Paul 1, Minnesota

**ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio

• **BAUGHMAN MFG. CO., INC.**, Shipman Road, Jerseyville, Ill.

• **BEAUMONT BIRCH CO.**, 1505 Race St., Philadelphia 2, Pa.

• **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.

• **L. BURMEISTER CO.**, 4535 W. Mitchell St., Milwaukee 14, Wisc.

• **BUTLER BIN CO.**, 945 Blackstone Ave., Waukesha, Wisc.

• **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.

• **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.

• **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.

• **JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio

• **C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.**

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.

• **LINK-BELT CO.**, 307 N. Michigan Ave., Chicago 1, Ill.

• **LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wis.

• **MATERIAL HANDLING INC.**, 4985 Fyler Ave., St. Louis 9, Mo.

• **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.

• **STURTEVANT MILL CO.**, 102 Clayton St., Dorchester, Boston 22, Mass.

**TRIANGLE ENGINEERING CO.**, 538 Broadway, Chesterton, Indiana

• **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio

## ELEVATORS, Portable (see Loaders, Truck)

## ENGINEERING SERVICE, Consulting and Designing

**W. R. BENDY CEMENT ENGINEERS**, 9403 Riverview Drive, St. Louis 15, Mo.

• **DORR-OLIVER, INC.**, Barry Place, Stamford, Conn.

**THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio

• **GIFFELS & VALLET, INC.**, 1000 Marquette Bldg., Detroit 26, Michigan

• **GRUENDLER CRUSHER & PULV. CO.**, 2915 N. Market St., St. Louis 6, Mo.

• **HAMMERMILLS, INC.**, (Subsidiary of PETTIBONE MULLIKEN CORP.), 639 C Avenue W., Cedar Rapids, Iowa

**E. LEE HEIDENREICH, JR.**, 75 Second St., Newburgh, N. J.

**HOWRY-BERG STEEL & IRON WORKS**, 1366 W. Oxford, Denver, Colorado

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.

• **LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wis.

**M & M ENGR. CORP.**, 1017 W. 23rd St., Indianapolis 23, Ind.

**MACDONALD ENGR. CO.**, 188 W. Randolph St., Chicago 1, Ill.

• **MCDOWELL CO., INC.**, 3203 West 71st St., Cleveland 2, Ohio

• **McLANAHAN & STONE CORP.**, McLANahan Bldg., Hollidaysburg, Pa.

• **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.

**NICHOLS ENGINEERING & RESEARCH CORP.**, 70 Fine St., New York 5, N.Y.

• **SAUERMAN BROS., INC.**, 620 S. 28th Ave., Bellwood, Illinois

**SHORE ENGINEERING**, 322 Broadway, New York 7, New York

• **F. L. SNAITH & CO.**, 20 West 43rd St., New York 18, N.Y.

• **SMITH ENGINEERING WORKS**, 532 East Capitol Dr., Milwaukee 12, Wis.

**WELLMAN ENGINEERING CO.**, 7000 Central Ave., Cleveland, Ohio

• **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

## ENGINES, Diesel (see Diesel Engines)

## ENGINES

1. Gasoline
  2. Kerosene
  3. Marine
  4. Natural Gas or L.P.G.
- **ALLIS-CHALMERS MFG. CO.**, 975 South 70th Street, Milwaukee 1, Wisconsin  
 1  
 • **ALLIS-CHALMERS MFG. CO.**, Tractor Group, Milwaukee 1, Wisc.  
 1  
 • **THE BUDA DIV., ALLIS-CHALMERS MFG. CO.**, 154th & Commercial, Harvey, Illinois  
 1-2-3-4  
**J. I. CASE COMPANY**, 700 State Street, Racine, Wisconsin  
 1-4  
 • **CHICAGO PNEUMATIC TOOL CO.**, 6 E. 44th St., New York 17, N.Y.  
 4  
 • **CHRYSLER INDUSTRIAL ENGINE DIV., CHRYSLER CORP.**, 12200 E. Jefferson, Detroit, Michigan  
 1-4

• **MARINE & INDUSTRIAL ENGINE DIV., CHRYSLER CORPORATION**, 2000 Van Horn Road—P.O. Drawer W, Trenton, Michigan  
 1-3-4

**CUMMINS ENGINE CO., INC.**, Fifth & Union Sts., Columbus, Ind.  
 3-4

• **FORD MOTOR CO.**, Industrial Engine Dept., 15050 Woodward Ave., P.O. Box 3581, Highland Park 3, Mich.  
 1

**DETROIT DIESEL ENGINE DIV., GENERAL MOTORS CORP.**, 13400 W. Outer Dr., Detroit 28, Mich.  
 3

**A. C. HORN CO. INC.**, 10th St. & 44th Ave., Long Island City 1, N.Y.

• **INTERNATIONAL HARVESTER CO.**, 180 N. Michigan Ave., Chicago 1, Ill.

1-2-3-4

• **LEROI COMPANY**, 1706 S. 68th St., Milwaukee 14, Wisc.  
 1-4

• **MINNEAPOLIS-MOLINE CO.**, 2864 Minnehaden, Minneapolis, Minnesota  
 1

• **NORDBERG MFG. CO.**, 3073 S. Chase Ave., Milwaukee 1, Wisc.  
 2-4

**D. W. ONAN & SONS, INC.**, University Ave. S.E., at 23th, Minneapolis 14, Minn.  
 1-2-4

• **REO MOTORS, INC., INDUSTRIAL & MARINE ENGINE DIV.**, Lansing, Mich.  
 1

• **SCHRAMM, INC.**, West Chester, Pa.  
 1

## ENTRAINED AIR INDICATORS

• **DEWEY AND AIMY CHEMICAL CO., DIV. OF W. R. GRACE & CO.**, 62 Whittemore Ave., Cambridge 40, Mass.

**A. C. HORN CO., INC.**, 10th St. & 44th Ave., Long Island City 1, N.Y.

**HUMBOLDT MFG. CO.**, 2014 N. Whipple St., Chicago 47, Ill.

## EXCAVATORS, Cableway Dragline (see Cable Excavators)

## EXCAVATORS, Clamshell (see Cranes)

## EXCAVATORS, Scraper (see Cable Excavators)

## EXCAVATORS, Tower (see Cableways)

## EXHAUSTERS

• **ALLIS-CHALMERS MFG. CO.**, 975 South 70th Street, Milwaukee 1, Wisconsin

• **AMERICAN AIR FILTER CO., INC.**, 107 Central Ave., Louisville 8, Ky.

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.

• **THE KIRK & BLUM MFG. CO.**, 3120 Forrer St., Cincinnati 9, Ohio

• **THE NORTHERN BLOWER CO.**, 6409 Barborton Ave., Cleveland 2, Ohio

• **REES BLOW PIPE MFG. CO.**, 340 Seventh St., San Francisco 3, Calif.

## EXPLOSIVES AND DYNAMITE

**AMERICAN CYANAMID COMPANY, EXPLOSIVES DEPARTMENT**, 30 Rockefeller Plaza, New York 20, N.Y.

• A dot before name indicates ROCK PRODUCTS Advertiser



## DIRECTORY

- **ATLAS POWDER COMPANY**, Wilmington 9, Delaware
- **E. I. DU PONT DE NEMOURS & CO., INC.**, 11502 Nemours Bldg., Wilmington 98, Del.
- **HERCULES POWDER CO.**, 946 King Street, Wilmington 99, Del.
- **ILLINOIS POWDER MFG. CO.**, 506 Olive St., St. Louis 16, Mo.
- **THE KING POWDER CO., INC.**, P.O. Box 974, Cincinnati 1, Ohio
- **SPENCER CHEMICAL CO.**, Dwight Bldg., Kansas City 5, Missouri
- **TROJAN POWDER CO.**, 17-N. 7th St., Allentown, Pa.

### F

#### FANS AND BLOWERS

- **AMERICAN AIR FILTER CO., INC.**, 107 Central Ave., Louisville 8, Ky.
- **THE FAHRLLOY CO.**, 150th & Lexington Aves., Harvey, Ill.
- **PLY ASH ARRESTOR CORP.**, P.O. Box 1883, Birmingham, Ala.
- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.
- **F. R. HANNON & SONS**, 1605 Waynesburg Road S.E., Canton 7, Ohio
- **JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 10, Ohio
- **JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **THE KIRK & BLUM MFG. CO.**, 3120 Farrer St., Cincinnati 9, Ohio
- **KOPPERS CO., INC.**, Koppers Bldg., Pittsburgh, Pennsylvania
- **THE NORTHERN BLOWER CO.**, 6409 Barborton Ave., Cleveland 2, Ohio
- **REES BLOW PIPE MFG. CO.**, 340 Seventh St., San Francisco 3, Calif.
- **SANDERSON-CYCLONE DRILL CO.**, 137 S. Main St., Orrville, Ohio
- **SPROUT, WALDRON & CO., INC.**, Muncy, Pa.
- **WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC.**, 813 Montgomery St., St. Louis 6, Mo.

#### FASTENERS, Belt (see Belt Fasteners)

#### FEEDERS, Concrete

- **BEAUMONT BIRCH COMPANY**, 1505 Race Street, Philadelphia 2, Penn.

#### FEEDERS, Fine Dust

- **BEAUMONT BIRCH COMPANY**, 1505 Race Street, Philadelphia 2, Penn.

#### FEEDERS

1. Apron
  2. Proportioning
  3. Reciprocating
  4. Screw
  5. Tumble
  6. Weight Proportioning
  7. Rotary
  8. Chain
  9. Scale Conveyor
  10. Vibrating
  11. Slurry
- **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc.
  - **AMERICAN CYANAMID COMPANY**, 30 Rockefeller Plaza, New York 20, New York
  - **BACON-PIETSCH CO., INC.**, 75 North Maple Avenue, Ridgewood, New Jersey

- **BALDWIN-LIMA-HAMILTON CORP.**, Construction Equipment Div., South Main St., Lima, Ohio
- **BARBER-GREENE CO.**, 400 N. Highland Ave., Aurora, Ill.
- **BEAUMONT BIRCH CO.**, 1505 Race St., Philadelphia 2, Pa.
- **BIRDSBORO STEEL FOUNDRY & MACHINE CO.**, Birdsboro, Pa.
- **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.
- **BONDED SCALE AND MACHINE CO.**, 2176 S. Third St., Columbus 7, Ohio
- **BUTLER BIN CO.**, 945 Blackstone Ave., Waukesha, Wisc.
- **CARRIER CONVEYOR CORP.**, 2144 Frankfort Avenue, Louisville 6, Ky.
- **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.
- **CONTINENTAL GIN CO.**, 4500 5th Ave., S., Birmingham, Ala.
- **THE DEISTER CONCENTRATOR CO.**, 935 Glasgow Ave., Fort Wayne 1, Ind.
- **DEISTER MACHINE CO.**, 1933 E. Wayne St., Fort Wayne 4, Ind.
- **DENVER EQUIPMENT CO.**, 1400 17th Street, Denver 17, Colo.
- **DIAMOND IRON WORKS, DIV. GOODMAN MANUFACTURING CO.**, 4838 S. Halsted, Chicago, Illinois
- **EAGLE CRUSHER CO., INC.**, 1000 Harding Way East, Galois, Ohio
- **EQUIPMENT ENGINEERS, INC.**, 41 Sutter St., San Francisco 4, Calif.
- **THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio
- **FANNING SCHUETT ENGINEERING CO.**, 4323 N. Third Street, Philadelphia 40, Pa.
- **FULLER CO.**, Catasauqua, Pa.
- **GRUENDLER CRUSHER & PULV. CO.**, 2915 N. Market St., St. Louis 6, Mo.
- **HAAMERMILLS, INC.** (Subsidiary of PETTIBONE MULLIKEN CORP.), 639 C Avenue W., Cedar Rapids, Iowa
- **HARDINGE CO., INC.**, 240 Arch St., York, Pa.
- **THE HOWE SCALE CO.**, Rutland, Vt.
- **HEWITT-ROBINS, INC.**, 686 Glenbrook Road, Stamford, Conn.
- **HOWRY-BERG STEEL & IRON WORKS**, 1366 W. Oxford, Denver, Colorado
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 10, Ohio
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.

- **LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wisc.
  - **E. F. MARSH ENGR. CO.**, 4324 W. Clayton Ave., St. Louis 10, Mo.
  - **TRANSPORTOMETER DIV. OF McDOWELL CO., INC.**, 16300 Waterloo Road, Cleveland 10, Ohio
  - **McLANAHAN & STONE CORP.**, McLANahan Bldg., Hollidaysburg, Pa.
  - **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.
  - **MERRICK SCALE MFG. CO.**, Summer St., Passaic, N. J.
  - **NORDBERG MFG. CO.**, 3073 S. Chase Ave., Milwaukee 1, Wisc.
  - **PIONEER ENGINEERING WORKS, INC.**, 1315 Central Ave. N.E., Minneapolis 13, Minn.
  - **RICHARDSON SCALE CO.**, 668-698 Van Houten Ave., Clifton, N. J.
  - **ROGERS IRON WORKS CO.**, Joplin, Mo.
  - **ROSS SCREEN & FEEDER CO.**, 19 Rector St., New York 6, N.Y.
  - **SCHAFER POLDOMETER CO.**, 2828 Smallman St., Pittsburgh 22, Pa.
  - **SIMPLICITY ENGINEERING CO.**, 1939 Ralph St., Durand, Mich.
  - **F. L. SMITH & CO.**, 11 West 42nd St., New York 36, N.Y.
  - **SMITH ENGINEERING WORKS**, 532 East Capitol Dr., Milwaukee 12, Wisc.
  - **SPROUT WALDRON & CO., INC.**, Muncy, Pa.
  - **STEPHENS-ADAMSON MFG. CO.**, Ridgeway Ave., Aurora, Ill.
  - **STRAUS MFG. CO., INC.**, 8383 Baldwin, Oakland 20, Calif.
  - **ST. REGIS PAPER CO.**, 230 Park Ave., New York 17, N.Y.
  - **SYNTRON COMPANY**, 450 Lexington Ave., Homer City, Pa.
  - **TRAYLOR ENGINEERING & MFG. CO.**, Allentown, Pa.
  - **TRIANGLE ENGINEERING CO.**, 538 Broadway, Chesterton, Indiana
  - **UNIVERSAL ENGINEERING CORP.**, 625 C Ave. N.W., Cedar Rapids, Iowa
  - **UNIVERSAL ROAD MACHINERY CO.**, 27 Emerick St., Kingston, N.Y.
  - **VIBRO-PLUS PRODUCTS, INC.**, 54-11 Queens Blvd., Woodside 77, N.Y.
  - **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.
  - **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio
  - **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.
  - **WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC.**, 813 Montgomery St., St. Louis 6, Mo.
- #### FILTER CLOTH, Slurry Filter
- **THE W. S. TYLER CO.**, 3613 Superior Ave., Cleveland 14, Ohio

#### FILTERS, Cement Slurry (see Slurry Filters)

#### FIRE BRICK, Kiln Liners, etc. (see Refractories)

#### FLEXIBLE COUPLINGS (see Drives)

#### FLOORING, Industrial, Iron and Steel

- **BLAW-KNOX CO.**, 2035 Farmers Bank Bldg., Pittsburgh, Pa.
- **DRAVO CORP.**, Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- **HENDRICK MFG. CO.**, 39 Dundoff St., Carbondale, Pa.
- **UNITED STATES STEEL CORP.**, 525 William Penn Place, Pittsburgh 30, Pa.

#### FLOORING SYSTEMS, Concrete (see Concrete Specialty Forms)

#### FLOTATION EQUIPMENT

- **DENVER EQUIPMENT CO.**, 1400 17th Street, Denver 17, Colo.
- **THE GALLIGHER CO.**, 545 W. 8th South St., Salt Lake City 4, Utah
- **GENERAL AMERICAN TRANSPORTATION CORP.**, 135 S. LaSalle St., Chicago 90, Ill.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **LOUISVILLE DRYING MACHINE CO.**, 139 South Fourth St., Louisville, Ky.
- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Ill.
- **THE MINE & SMELTER SUPPLY CO.**, 17th & Blake, Denver 17, Colo.
- **F. L. SMITH & CO.**, 20 W. 43rd St., New York 36, N.Y.
- **THE STEARNS-ROGER MFG. CO.**, 1720 California St., Denver 2, Colo.
- **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

#### FLOTATION REAGENTS & SUPPLIES

- **AMERICAN CYANAMID COMPANY**, 30 Rockefeller Plaza, New York 20, New York
- **ARMOUR & COMPANY**, 1355 W. 31st St., Chicago 9, Ill.
- **DENVER EQUIPMENT CO.**, 1400 17th St., Denver 17, Colo.
- **HERCULES POWDER CO.**, Delaware Trust Bldg., Wilmington 99, Del.

#### FROGS AND SWITCHES, Railway

- **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.
- **THE FROG, SWITCH & MFG. CO.**, Carlisle, Pa.
- **L. B. FOSTER CO.**, P.O. Box 1647, Pittsburgh 30, Pa.
- **TAYLOR-WHARTON IRON & STEEL CO.**, High Bridge, N. J.

#### FURNACES, Forging

- **DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO.**, 4838 S. Halsted, Chicago, Illinois
- **INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.
- **JOHNSTON MFG. CO.**, 2825 E. Hennepin Ave., Minneapolis 13, Minn.

#### FUSES, Detonating and Blasting (see Blasting Supplies)

• A dot before name indicates ROCK PRODUCTS Advertiser



# DIRECTORY

## G

### GAS ANALYZERS AND RECORDERS

- BAILEY METER CO., 1050 Ivanhoe Road, Cleveland 10, Ohio
- ARNOLD O. BECKMAN, INC., 1020 Mission St., South Pasadena, Calif.
- CAMBRIDGE INSTRUMENT CO., INC., 3778 Grand Central Terminal, New York 17, N.Y.
- THE HAYS CORP., 742 East 8th St., Milwaukee City 21, Ind.
- MINE SAFETY APPLIANCES CO., 201 N. Braddock Ave., Pittsburgh 8, Pa.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.

### GAS BURNERS, Natural

- CLEAVER-BROOKS CO., 326 E. Keefe Ave., Milwaukee 12, Wisc.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.

### GAS PRODUCERS

- WELLMAN ENGINEERING CO., 7000 Central Ave., Cleveland 4, Ohio

### GATES (see Bin Gates and Chutes)

### GEAR-MOTORS

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- THE FALK CORP., 3001 W. Canal St., Milwaukee 8, Wisc.
- FOOTE BROS. GEAR & MACHINE CORP., 4545 S. Western Ave., Chicago, Illinois
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- STERLING ELECTRIC MOTORS, INC., 5401 Telegraph Rd., Los Angeles 22, Calif.
- U.S. ELECTRICAL MOTORS, INC., 200 E. Slauson Ave., Los Angeles 54, Calif.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### GEAR REDUCERS (see Drivers)

### GEARS

- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- BRAD FOOTE GEAR WORKS INC., 1309 S. Cicero, Cicero, Illinois
- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.
- THE FALK CORP., 3001 W. Canal St., Milwaukee 8, Wisc.
- FARREL-BACON, Ansonia, Conn.
- FOOTE BROS. GEAR & MACHINE CORP., 4545 S. Western Ave., Chicago, Illinois
- ILLINOIS GEAR & MACHINE CO., 2108 N. Natchez, Chicago, Illinois
- INDUSTRIAL GEAR MFG. CO., 4539 W. Van Buren, Chicago, Illinois
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- W. A. JONES FOUNDRY & MACHINE CO., 4401 Roosevelt Road, Chicago 24, Ill.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- McLANAHAN & STONE CORP., McLanahan Bldg., Hollidaysburg, Pa.
- MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Illinois

- PHILADELPHIA GEAR WORKS, INC., G St. below Erie Ave., Philadelphia, Pennsylvania
- STROM PROCESS STEEL CO., 1428 High St. N. S., Pittsburgh 12, Pa.
- TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N. J.
- THE TOOL STEEL GEAR & PINION CO., 211 Township Ave., Cincinnati 16, Ohio
- TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.
- TWIN DISC CLUTCH CO., Racine, Wisconsin
- VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.
- WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio

### GENERATOR SETS, Electric

1. Diesel Engine
  2. Gasoline Engine
  3. Electric Motor
  4. Turbine
- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wisc. 2-3-4
  - THE BUDA DIV. ALLIS-CHALMERS MFG. CO., 154th & Commercial, Harvey, Illinois 1-2
  - CATERPILLAR TRACTOR CO., Peoria 8, Ill. 1
  - CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y. 1
  - CUMMINS ENGINE CO., INC., Fifth & Union Sts., Columbus, Ind. 1
  - ELECTRIC MACHINERY MFG. CO., 800 Central Avenue, Minneapolis 13, Minn. 3
  - GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y. 1-2-3-4
  - GENERAL MOTORS CORP., DETROIT DIESEL DIV., 13400 W. Outer Drive, Detroit 28, Mich. 1
  - INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill. 1-2
  - LEROI COMPANY, 1706 S. 68th St., Milwaukee 14, Wisc. 3
  - MURPHY DIESEL CO., 5317 West Burnham St., Milwaukee 14, Wisc. 1
  - NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wisc. 1
  - D. W. ONAN & SONS, INC., University Ave. S.E., at 25th, Minneapolis 14, Minn. 1-2
  - THE READY-POWER CO., 11231 Freud Ave., Detroit 14, Mich. 1-2
  - WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### GLAZING COMPOUNDS, for Concrete Masonry Units

- THE BURNS & RUSSELL CO., Tower Building, Baltimore 2, Md.
- A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.

### GRAPPLES (see Buckets)

### GREASE (see Lubricants)

### GRINDERS, for Detachable Bits (see Bits, Grinders)

### GRINDING AIDS, Cement

- DEWEY AND ALMY CHEMICAL CO., DIV. OF W. R. GRACE & CO., 62 Whittemore Ave., Cambridge 40, Mass.

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- MONSANTO CHEMICAL CO., PHOSPHATE DIV., 1700 S. Second St., St. Louis 4, Mo.

### GRINDING MEDIA, Mills

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wisc.
- AMERICAN FORGE CO., Niles, Calif.
- BETHLEHEM STEEL CO., Third St., Bethlehem, Penn.
- COATES STEEL PRODUCTS CO., 1937 Franklin Ave., Greenville, Ill.
- THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado
- COORS PORCELAIN CO., Golden, Colorado
- DENVER EQUIPMENT CO., 1400 17th St., Denver 17, Colo.
- FREDERIC IRON & STEEL INC., 701 East St., Fredrick, Md.
- HARDINGE CO., INC., 240 Arch St., York, Pa.
- HUBER-WARCO CO., Bucyrus and Marion, Ohio
- INGERSOLL RAND CO., 11 Broadway, New York, N.Y.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Avenue, New York 16, N.Y.
- SHEFFIELD STEEL CORP., Div. of Armco Steel, Sheffield Station, Kansas City 3, Mo.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.
- UNITED STATES STEEL CORP., 525 William Penn Place, Pittsburgh 30, Pa.

### GRINDING MILL CONTROLS, Feed Regulators

- HARDINGE CO., INC., 240 Arch St., York, Pa.
- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.

### GRINDING PEBBLES (see Grinding Media)

### GRIZZLIES (see Screens)

### GUARDS, Machinery

- A & A MFG. CO., 2017 W. Clybourn St., Milwaukee 3, Wisc.
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- E. D. BULLARD CO., 275 Eighth St., San Francisco 3, Calif.
- THE KIRK & BLUM MFG. CO., 3120 Farrer St., Cincinnati 9, Ohio
- JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.
- THE STANDARD METAL MFG. CO., Malinta, Ohio

### GUNS AND CARTRIDGES, Kiln Ring Removal

- E. I. DU PONT DE NEMOURS & CO., INC., 11502 Nemours Bldg., Wilmington 98, Del.
- REMINGTON ARMS CO., INC., DIV. OF E. I. DU PONT DE NEMOURS CO., INC., 939 Barnum Ave., Bridgeport 2, Conn.

### GUNS, Hydraulic Monitor (see Monitors, Hydraulic)

### GYPSUM PLANT MACHINERY

- J. B. EHRSAM & SONS MFG. CO., Enterprise, Kansas
- W. P. HEIMEKEN, INC., 50 Broad St., New York 3, N.Y.

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

- McLANAHAN & STONE CORP., McLanahan Bldg., Hollidaysburg, Pa.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.

- SEPARATOR DIV., SOUTHWESTERN ENGINEERING CO., 4800 S. Santa Fe Ave., Los Angeles 38, Calif.

- STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass.

- UNIVERSAL ROAD MACHINERY CO., 27 Emerich St., Kingston, N.Y.

- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### GYPSUM PLANTS, Engineers, Contractors

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.
- F. L. SMITH & CO., 20 W. 43rd St., New York 36, N.Y.

## H

### HAMMERMILLS (see Crushers, Hammer)

### HARDENERS, Concrete

- A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.
- THE MASTERS BUILDERS CO., 7016 Euclid Ave., Cleveland 3, Ohio
- THE RESISTO-LOY COMPANY, Grand Rapids 7, Mich.
- SOLVAY PROCESS DIV., ALLIED CHEMICAL & DYE CORP., 61 Broadway, N. New York 6, N.Y.

### HARD SURFACING METALS (see Welding Rods, Hard Facing)

### HEAT EXCHANGERS

- CLEAVER-BROOKS CO., 326 E. Keefe Ave., Milwaukee 12, Wisc.
- COEN CO., 40 Boardman Place, San Francisco, Calif.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- F. L. SMITH & CO., 20 West 43rd St., New York 36, N.Y.
- WESTERN PRECIPITATION CORP., 1016 W. Ninth St., Los Angeles 15, Calif.

### HEAT TREATING MACHINES, Drill Steel

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

### HEATERS, Concrete Mixer

- CIMCO, CONSTRUCTION-INDUSTRIAL MFG. CO., Box 422, Marshalltown, Iowa
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- HAUCK MANUFACTURING COMPANY, 124-136 Tenth Street, Brooklyn 15, New York
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- LITTLEFORD BROS., INC., 453 E. Pearl St., Cincinnati 2, Ohio
- STORM, INC., 845-92nd Ave., Oakland 3, Calif.

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# DIRECTORY

## HEATERS, Plant, Hot Air

- **AMERICAN AIR FILTER CO., INC.**, 107 Central Ave., Louisville 8, Ky.
- **CLEAVER-BROOKS CO.**, 326 E. Keefe Ave., Milwaukee 12, Wis.
- **COLORADO IRON WORKS**, 1624 17th St., Denver, Colorado
- **DRAGO CORP.**, Drago Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- **JACKSON & CHURCH CO.**, 321 N. Hamilton St., Saginaw, Mich.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **PEABODY ENGINEERING CO.**, 580 Fifth Ave., New York, N.Y.
- **PRAT-DANIEL CORP.**, 2 Meadow St., So. Norwalk, Conn.

## HEAVY-MEDIA SEPARATION PROCESS

- **AMERICAN CYANAMID CO.**, 30 Rockefeller Plaza, New York 20, New York
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **THE MINE & SMELTER SUPPLY CO.**, 17th & Blake, Denver 17, Colo.
- **ORE & CHEMICAL COMPANY**, 80 Broad St., New York, N.Y.
- **STEARN'S MAGNETIC INC.**, 675 S. 28th St., Milwaukee 46, Wis.
- **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

## HOISTS

- **AMERICAN HOIST & DERRICK CO.**, 63 S. Robert St., St. Paul 1, Minn.
- **CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York 17, N.Y.
- **CLIPPER MFG. CO.**, 2800 Warwick, Kansas City 8, Mo.
- **CONVERTO MANUFACTURING CO.**, Cambridge City, Ind.
- **COOK BROS. EQUIPMENT CO.**, 3334 San Fernando Road, Los Angeles 65, Calif.
- **J. B. EHRSAM & SONS MFG. CO.**, Enterprise, Kansas
- **THE GALLON ALLSTEEL BODY CO.**, 603 S. Market St., Gallon, Ohio
- **GARDNER-DENVER CO.**, Quincy, Ill.
- **HARNISCHFEGGER CORP.**, 4400 W. National Ave., Milwaukee 46, Wis.
- **THE HEIL CO.**, 3000 W. Montana St., Milwaukee 1, Wis.
- **HERCULES STEEL PROD. CORP.**, Sherman Street, Gallon, Ohio
- **INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.
- **JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio
- **JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **M & M ENGR. CORP.**, 1017 W. 23rd St., Indianapolis 23, Ind.
- **THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.
- **ROGERS IRON WORKS CO.**, Joplin, Mo.
- **RUSSELL MFG. CO.**, 1328 Maple Ave., Haddon Heights, N. J.
- **SAUERMAN BROS., INC.**, 620 S. 28th Ave., Bellwood, Illinois
- **THE STEARN'S-ROGER MFG. CO.**, 1720 California St., Denver 2, Colo.
- **THOR POWER TOOL CO.**, 175 N. State St., Aurora, Ill.
- **VULCAN IRON WORKS**, 730 So. Main St., Wilkes-Barre, Pa.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.
- **WHITING CORP.**, Norway, Ill.

- **WRIGHT HOIST DIV., AMERICAN CHAIN & CABLE CO., INC.**, York, Pa.
- **THE YALE & TOWNE MFG. CO.**, Roosevelt Blvd. & Haldeman Ave., Philadelphia 13, Pa.

## HOPPERS, Aggregates, Cement, etc.

- **BALDWIN - LIMA - HAMILTON CORP., CRUSHER SALES DIV.**, Lima, Ohio
- **BARBER-GREENE CO.**, 400 N. Highland Ave., Aurora, Ill.
- **BUTLER BIN CO.**, 945 Blackstone Ave., Waukesha, Wisc.
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.
- **J. B. EHRSAM & SONS MFG. CO.**, Enterprise, Kansas
- **THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio
- **FANNING SCHUETT ENGINEERING CO.**, 4325 N. Third Street, Philadelphia 40, Pa.
- **GENERAL ENGINES CO., INC.**, 307 Hunter St., Gloucester City, N.J.
- **HOWRY-BERG STEEL & IRON WORKS**, 1366 W. Oxford, Denver, Colorado
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **C. S. JOHNSON CO., P. O. Box 71**, Champaign, Ill.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wis.
- **E. F. MARSH ENGR. CO.**, 4324 W. Clayton Ave., St. Louis 10, Mo.
- **MATERIAL HANDLING, INC.**, 4985 Flyer Ave., St. Louis, Missouri
- **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.
- **TRIANGLE ENGINEERING CO.**, 538 Broadway, Chesterton, Indiana
- **RICHARD P. WALSH CO.**, 30 Church St., New York, New York

## HOPPERS, Unloading Ready Mixed Concrete

- **BUTLER BIN CO.**, 945 Blackstone Ave., Waukesha, Wisc.
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.
- **HOWRY-BERG STEEL & IRON WORKS**, 1366 W. Oxford, Denver, Colorado
- **RICHARD P. WALSH CO.**, 30 Church St., New York, New York

## HOSE, Rubber

1. Hydraulic
  2. Pneumatic
  3. Oil
  4. Sand
- **AERO-COUPLING CORP.**, 3015 Winona Ave., Burbank, Calif. 1-2-3-4
  - **AEROQUIP CORP.**, 300 S. East Ave., Jackson, Mich. 1-2-3-4
  - **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill. 4
  - **THE AMERICAN RUBBER MFG. CO.**, 1145 Park Avenue, Oakland 8, Calif. 1-2-3-4
  - **BOSTON WOVEN HOSE & RUBBER COMPANY, P. O. Box 1071**, Boston 3, Massachusetts 1-2-3-4

- **CARLYLE RUBBER CO., INC.**, 62 Park Place, New York 7, N.Y. 1-2-3-4

- **CHICAGO PNEUMATIC TOOL CO.**, 6 E. 44th St., New York 17, N.Y. 2

- **GATES RUBBER CO.**, 999 South Broadway, Denver 17, Colo. 1-4

- **GOODALL RUBBER CO.**, 403 Whitehead Road, Trenton 4, N. J. 1-2-3-4

- **B. F. GOODRICH CO.**, 500 South Main St., Akron 11, Ohio 1-2-3-4

- **THE GOODYEAR TIRE & RUBBER CO., INC.**, 1144 E. Market St., Akron 16, Ohio 1-2-3-4

- **HETHERINGTON & BERNER, INC.**, 701 Kentucky Ave., Indianapolis 7, Ind. 4

- **HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn. 1-2-3-4

- **INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y. 2

- **JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa. 2

- **REPUBLIC RUBBER DIV., Lee Rubber & Tire Corp.**, Albert Street, Youngstown 1, Ohio 1-2-3-4

- **PANGBORN CORP.**, Pangborn Blvd., Hagerstown, Md. 4

- **PIONEER RUBBER MILLS**, 520 Fourth St., San Francisco 11, Calif. 1-2-3-4

- **QUAKER RUBBER CORP., DIV. OF H. K. PORTER CO., INC., OF PITTSBURGH**, Tacony & Conly Sts., Philadelphia 24, Pa. 1-2-3-4

- **RAYBESTOS DIV., RAYBESTOS-MANHATTAN, INC.**, 75 E. Main St., Stratford, Conn. 1-2-3-4

- **RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV.**, 92 Townsend St., Passaic, N. J. 1-2-3-4

- **RODGER'S HYDRAULIC, INC.**, 7401 Walker St., Minneapolis 16, Minn. 1

- **THERMOID CO.**, 200 W. Whitehead Rd., Trenton, N. J. 1-2-3-4

- **UNITED STATES RUBBER CO.**, 1230 Ave. of the Americas, New York 20, N.Y. 1-2-3-4

## HOSE FITTINGS

- **AERO-COUPLING CORP.**, 3015 Winona Ave., Burbank, Calif.
- **AEROQUIP CORP.**, 300 S. East Ave., Jackson, Mich.
- **AMERICAN FLEXIBLE COUPLING**, Pittsburgh Ave., Erie, Pa.
- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **THE AMERICAN RUBBER MANUFACTURING COMPANY**, 1145 Park Avenue, Oakland 8, California
- **BOSTON WOVEN HOSE & RUBBER COMPANY, P. O. Box 1071**, Boston 3, Massachusetts
- **CARLYLE RUBBER CO., INC.**, 62 Park Place, New York 7, N.Y.
- **CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York 17, N.Y.
- **DIXON VALVE & COUPLING CO.**, Hancock St. & Columbia Ave., Philadelphia 22, Pa.
- **HOSE ACCESSORIES CO.**, Lehigh Ave. at 17th St., Philadelphia 32, Pa.
- **INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.
- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois
- **PIONEER RUBBER MILLS**, 520 Fourth St., San Francisco 11, Calif.

- **RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV.**, 92 Townsend St., Passaic, N. J.

- **THERMOID CO.**, 200 Whitehead Rd., Trenton, N. J.

- **VICTOR EQUIPMENT CO.**, 844 Folsom St., San Francisco 7, Calif.

- **WORTHINGTON CORP.**, 426 Washington Ave., Harrison, N. J.

## HULLS, Dredge (see Dredges)

## HUMIDIFIERS, Laboratory (see Laboratory Apparatus)

## HYDRAULIC CYLINDERS

- **THE COMMERCIAL SHEARING & STAMPING CO.**, 1775 Logan Ave., P.O. Box 719, Youngstown 1, Ohio
- **THE GALLON ALL STEEL BODY CO.**, 603 S. Market Street, Gallon, Ohio
- **GAR WOOD IND., INC.**, Wayne Division, Wayne, Mich. and Richmond, California
- **MONARCH ROAD MACHINERY CO.**, 1331 Michigan St., N.E., Grand Rapids, Michigan
- **NATIONAL LIFT CO.**, 800 Lowell St., Ypsilanti, Mich.
- **ST. PAUL HYDRAULIC HOIST**, 2207 University Ave., Minneapolis 14, Minn.
- **ANKER-HOLTH DIV., WELLMAN ENGINEERING CO.**, Port Huron, Michigan

## HYDRATORS, Lime

- **DORR-OLIVER, INC.**, Barry Place, Stamford, Conn.
- **L. H. EBERHART**, 85 Cottage Ave., Tiffin, Ohio
- **HARDINGE CO., INC.**, 240 Arch St., York, Pa.
- **W. P. HEINEKEN, INC.**, 90 Broad St., New York 3, N.Y.
- **NORDBERG MFG. CO.**, 3073 S. Chase Ave., Milwaukee 1, Wisc.
- **TRAYLOR ENGINEERING & MFG. CO.**, Allentown, Pa.
- **VULCAN IRON WORKS**, 730 So. Main St., Wilkes-Barre, Pa.

## HYDROSEPARATORS (see Sand Recovery Machinery)

I

## IDLERS, Conveyor (see Conveyor Idlers)

## INDICATORS, Bin (see Bin Level Indicators)

## INSULATION, Heat (see Refractories)

## INSTRUMENTS, Process Control

- **ARNOLD O. BECKMAN, INC.**, 1020 Mission St., South Pasadena, Calif.
- **BROWN INSTRUMENT CO.**, Wayne & Roberts Ave., Philadelphia, Pa.
- **THE FOXBORO CO.**, 38 Neponset Ave., Foxboro, Mass.
- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.
- **THE HAYS CORP.**, 742 East 8th St., Michigan City 21, Ind.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.
- **PANALARM DIV. OF PANELLIT, INC.**, 7401 N. Hamlin, Skokie, Illinois

• A dot before name indicates ROCK PRODUCTS Advertiser

## DIRECTORY

**WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

J

### JACKS, Hydraulic

- **THE BUDA DIV., ALLIS-CHALMERS MFG. CO.**, 154th & Commercial, Harvey, Illinois
- **RODGERS HYDRAULIC, INC.**, 7401 Walker St., Minneapolis 16, Minn.
- **TEMPLETON, KENLY & CO.**, 2309 Gardner Rd., Broadview, Illinois

### JIGS, Sand and Gravel

- **DENVER EQUIPMENT CO.**, 1400 17th Street, Denver 17, Colo.
- **JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio
- **MECKUM ENG. INC.**, Dayton Road, Ottawa, Ill.
- **STRAUB MFG. CO., INC.**, 8383 Baldwin, Oakland 20, Calif.
- **CHARLES E. WOOD**, 906 North Water St., Milwaukee, Wis.
- **YUBA MFG. CO.**, 351 California St., San Francisco 4, Calif.

K

### KETTLES, Gypsum, Calcining

- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

### KILN PARTS, ENDS, ETC.

- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 25th Ave., Portland 10, Ore.
- **ELECTRO ALLOY DIV., AMERICAN BRAKE SHOE CO.**, Elyria, Ohio
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **MOORE DRY KILN CO.**, Jacksonville 1, Fla.
- **RICHARD REMMEY SON CO.**, 3003 Hedley St., Philadelphia 37, Pa.
- **F. L. SMITH & CO.**, 20 West 43rd St., New York 36, N.Y.
- **STANDARD DRY KILN CO.**, 798 South Harding, Indianapolis, Ind.
- **STROM PROCESS STEEL CO.**, 1428 High St. N. S., Pittsburgh 12, Pa.
- **UNIVERSAL DOOR CARRIER INC.**, 1117 Cornell Ave., Indianapolis 2, Ind.

### KILNS, Curing, Concrete

- **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **JACKSON & CHURCH CO.**, 321 N. Hamilton St., Saginaw, Mich.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **LITTLEFORD BROS., INC.**, 453 E. Pearl St., Cincinnati 2, Ohio
- **MCDERMOTT BROS. CO.**, Third & Washington Sts., Allentown, Pennsylvania
- **SHORE ENGINEERING**, 322 Broadway, New York 7, New York
- **STORM, INC.**, 845-92nd Ave., Oakland 3, Calif.
- **TRUAX MACHINE CO.**, 16 Michigan St., Seattle, Wash.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, New York

### KILNS, Lime, Vertical

- **THE ELLERNAN CO.**, 1210 Continental Bank Bldg., Salt Lake City 1, Utah
- **HARDINGE CO., INC.**, 240 Arch St., York, Pa.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **NICHOLS ENGINEERING & RESEARCH CORP.**, 70 Pine St., New York 5, N.Y.
- **VULCAN IRON WORKS**, 730 So. Main St., Wilkes-Barre, Pa.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, New York

### KILNS, Rotary, Cement, Gypsum, Lime

- **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc.
- **BETHLEHEM STEEL CO.**, Third Street, Bethlehem, Penn.
- **HARDINGE CO., INC.**, 240 Arch St., York, Pa.
- **W. P. HEINEKEN, INC.**, 30 Broad St., New York 3, N.Y.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **NORDBERG MFG. CO.**, 3073 S. Chase Ave., Milwaukee 1, Wisc.
- **THE SALEM TOOL CO.**, 767 S. Ellsworth Ave., Salem, Ohio
- **F. L. SMITH & CO.**, 20 West 43rd St., New York 36, N.Y.
- **STANDARD STEEL CORP.**, 3036 Bayle Ave., Los Angeles 58, Calif.
- **R. C. STANHOPE, INC.**, 60 E. 42nd St., New York, N.Y.
- **TRAYLOR ENGINEERING & MFG. CO.**, Allentown, Pa.
- **VULCAN IRON WORKS**, 730 So. Main St., Wilkes-Barre, Pa.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, New York
- **WEBB CORP.**, Webb City, Mo.

### KILN DOORS (Circle Curing Room Doors)

L

### LABORATORY APPARATUS

- **BALDWIN-LIMA-HAMILTON CORP.**, Eddystone Div., Philadelphia 42, Pa.
- **DENVER EQUIPMENT CO.**, 1400 17th Street, P.O. Box 5268, Denver 17, Colo.
- **FORNEY'S INC.**, Elm & Russell Sts., New Castle, Pa.
- **THE GALIGHER CO.**, 345 W. 8th South St., Salt Lake City 4, Utah
- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.
- **GENERAL SCIENTIFIC EQUIPMENT CO.**, 2735 W. Huntingdon St., Philadelphia 32, Pa.
- **HARDINGE CO., INC.**, 240 Arch St., York, Pennsylvania
- **HUMBOLDT MFG. CO.**, 2014 N. Whipple St., Chicago 47, Ill.
- **INTERNATIONAL HARVESTER CO.**, 180 N. Michigan Ave., Chicago 1, Ill.
- **J. A. JONES CONCRETE MACHINERY CO.**, 108 Morning Road, Pittsburgh, Pa.
- **THE MINE & SMELTER SUPPLY CO.**, 17th & Blake, Denver 17, Colo.
- **F. L. SMITH & CO.**, 20 West 43rd St., New York 36, N.Y.
- **SPERRY PRODUCTS, INC.**, Shelter Rock Rd., Danbury, Conn.
- **STURTEVANT MILL COMPANY**, 102 Clayton St., Dorchester, Boston 22, Mass.
- **THE W. S. TYLER CO.**, 3615 Superior Ave., Cleveland 14, Ohio

- **UNIVERSAL VIBRATING SCREEN CO.**, Deane Blvd. & St. Paul RR., Racine, Wis.
- **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

### LABORATORIES, Testing

- **BALDWIN-LIMA-HAMILTON CORP.**, Eddystone Div., Philadelphia 42, Pa.
- **DENVER EQUIPMENT CO.**, 1400 17th Street, Denver 17, Colo.
- **THE GALIGHER CO.**, 345 W. 8th South St., Salt Lake City 4, Utah
- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.
- **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

### LACING, Belt (see Belt Fasteners & Lacing)

### LADDERS, Dredge

- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **EAGLE IRON WORKS**, 137 Holcomb Ave., Des Moines 4, Iowa
- **MECKUM ENGINEERING INC.**, Dayton Road, Ottawa, Illinois
- **MORRIS MACHINE WORKS**, 20 E. Genesee St., Baldwinville, N.Y.
- **YUBA MFG. CO.**, 351 California St., San Francisco 4, Calif.

### LAUNDERS (see Chutes)

### LIFT TRUCKS, Concrete

#### Products, etc.

1. Gasoline
  2. Electric
  3. Gas-Electric
  4. Diesel
  5. L P Gas
- **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio
  - **BAKER-BAULANG COMPANY**, 1250 West 80th St., Cleveland, Ohio
  - **BARRETT CRAVENS**, 606 Dundee Rd., Northbrook, Illinois
  - **BICKERSTAFF, INC.**, Columbus, Ga.
  - **THE BUDA DIV., ALLIS-CHALMERS MFG. CO.**, 154th & Commercial, Harvey, Illinois
  - **CLARK EQUIPMENT CO.**, Industrial Truck Div., Battle Creek 60, Mich.
  - **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
  - **CONCRETE TRANSPORT MIXER CO.**, 4987 Fyler Ave., St. Louis 9, Mo.
  - **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.
  - **ERICKSON POWER LIFT TRUCKS, INC.**, 243 St. Anthony Blvd. N.E., Minneapolis 13, Minn.
  - **GERLINGER CARRIER CO.**, Dallas, Ore.
  - **HYSTER COMPANY**, 2918 N.E. Clackamas St., Portland 8, Ore.
  - **THE KNICKERBOCKER CO.**, Truckman Div., 603 Liberty St., Jackson, Mich.
  - **KWIK MIX CO.**, Port Washington, Wisc.

**LIFT TRUCKS, INC.**, 2425 Spring Grove Ave., Cincinnati 14, Ohio

**MERCURY MFG. CO.**, 4044 S. Halsted St., Chicago, Illinois

**MOBILIFT CORP.**, 835 S.E. Main St., Portland 14, Ore.

**PRASCHAK MACHINE CO.**, Marshallfield, Wis.

**THE READY-POWER CO.**, 11231 Freud Ave., Detroit 14, Mich.

**TRACTO-LIFT COMPANY**, 800 E. 18th St., Kansas City 8, Mo.

**TRUAX MACHINE & TOOL CO.**, 16 Michigan St., Seattle 8, Wash.

**THE YALE & TOWNE MFG. CO.**, Roosevelt Blvd. & Haldeman Ave., Philadelphia 15, Pa.

### LIGHTERS, Fuse (see Blasting Supplies)

### LIME KILNS (see Kilns)

### LIME AND LIMESTONE SPREADERS

- **BAUGHMAN MFG. CO., INC.**, Shipman Road, Jerseyville, Ill.
- **FLINK CO.**, 502 N. Vermillion St., Streator, Ill.
- **HENDERSON MFG. CO., INC.**, 132 South Leonard St., Waterbury, Connecticut
- **HERCULES STEEL PROD. CORP.**, Sherman Street, Galion, Ohio
- **HIGHWAY EQUIPMENT CO., INC.**, 623 D Ave. N.W., Cedar Rapids, Iowa
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **CONCRETE TRANSPORT MIXER CO.**, 4987 Fyler Ave., St. Louis 9, Mo.
- **MATERIAL HANDLING INC.**, 4985 Fyler Ave., St. Louis 9, Mo.
- **SERVICE ENGR. CO.**, Summit, N.J.

### LIME PLANTS

- **CONCRETE TRANSPORT MIXER CO.**, 4987 Fyler Ave., St. Louis 9, Mo.
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **MATERIAL HANDLING INC.**, 4985 Fyler Ave., St. Louis 9, Mo.
- **F. L. SMITH & CO.**, 20 West 43rd St., New York 36, N.Y.
- **STURTEVANT MILL COMPANY**, 102 Clayton St., Dorchester, Boston 22, Mass.
- **UNIVERSAL ENGINEERING CORP.**, 623 C Ave. N.W., Cedar Rapids, Iowa

### LINERS, Kiln (see Refractories)

### LINERS, METAL, Grinding Mill

- **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc.
- **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.
- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **DENVER EQUIPMENT CO.**, 1400 17th St., Denver 17, Colo.
- **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 25th Ave., Portland 10, Ore.

• A dot before name indicates ROCK PRODUCTS Advertiser



# DIRECTORY

- **HARDINGE CO., INC.**, 240 Arch St., York, Pa.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **F. L. SMITH & CO.**, 20 West 43rd St., New York 36, N.Y.
- **TAYLOR-WHARTON IRON & STEEL CO.**, High Bridge, N. J.
- **THOMAS FOUNDRIES, INC.**, 3800 10th Ave., P.O. Box 1111, Birmingham 1, Ala.
- **UNITED STATES STEEL CORP.**, 825 William Penn Plaza, Pittsburgh 30, Pa.

## LINERS, Pump, Metal

- **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.
- **GARDNER-DENVER CO.**, Quincy, Ill.
- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois
- **PETTIBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.
- **STODDY CO.**, Whittier, Calif.
- **TAYLOR-WHARTON IRON & STEEL CO.**, High Bridge, N. J.
- **THOMAS FOUNDRIES, INC.**, 3800 10th Ave., Birmingham 1, Ala.

## LINERS, Pump, Rubber

- **DENVER EQUIPMENT CO.**, 1400 17th St., Denver 17, Colo.
- **THE GALLIGHER CO.**, 545 W. 8th South St., Salt Lake City 4, Utah
- **GARDNER-DENVER CO.**, Quincy, Ill.
- **GOODALL RUBBER CO.**, 403 Whitehead Road, Trenton 4, N. J.
- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois
- **PIONEER RUBBER MILLS**, 520 Fourth St., San Francisco 11, Calif.
- **UNITED STATES RUBBER CO.**, 1230 Ave. of the Americas, New York 20, N.Y.

## LININGS, CHUTE (see Chute Linings)

## LOADERS

1. Boat
  2. Car
  3. Truck
- **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio
  - **AMERICAN HOIST AND DERRICK COMPANY**, 63 South Robert St., St. Paul 1, Minnesota
  - **ATHEY PRODUCTS CORP.**, 3631 W. 63rd St., Chicago 38, Ill.
  - **BARBER-GREENE CO.**, 400 N. Highland Ave., Aurora, Ill.
  - **BAUGHMAN MFG. CO., INC.**, Shipman Road, Jerseyville, Ill.
  - **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.
  - **BONDED SCALE AND MACHINE CO.**, 2176 S. Third St., Columbus 7, Ohio
  - **C & D MANUFACTURING CO.**, Perkins, Calif.
  - **EAGLE CRUSHER CO., INC.**, 1000 Harding Way East, Gallon, Ohio
  - **THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio
  - **FLEXOVATOR MFG. CO.**, 1220 S. Acama St., Denver 19, Colo.
  - **THE GALLON ALLSTEEL BODY CO.**, 603 S. Market St., Gallon, Ohio

**GEO. HAISS MFG. CO., INC.**, Div. Pettibone Mulliken Corp., 350 Fifth Ave., New York 1, N.Y.

- **THE FRANK O. HOUGH CO., DIV. OF INTERNATIONAL HARVESTER CO.**, 939 Sunnyside Ave., Libertyville, Ill.
- **THE JAEGER MACHINE CO.**, 550 W. Spring St., Columbus 16, Ohio
- **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.
- **JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **LE ROI COMPANY**, 1706 South 68th St., Milwaukee 14, Wis.
- **LINK-BELT CO.**, 307 N. Michigan Ave., Chicago 1, Ill.
- **N. P. NELSON IRON WORKS, INC.**, 820 Bloomfield Ave., Clifton, N. J.
- **PETTIBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.
- **POWER CURVE CONVEYOR CO.**, 3185 S. Jason St., Denver, Colorado
- **STEPHENS-ADAMSON MFG. CO.**, Ridgeway Ave., Aurora, Ill.
- **TOWMOTOR CORP.**, 1226 E. 152nd St., Cleveland 10, Ohio
- **TRACTOMOTOR CORP.**, Deerfield, Ill.
- **TRIANGLE ENGINEERING CO.**, 538 Broadway, Chesterton, Indiana
- **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio
- **WILLARD CONCRETE MACHINERY CO., LTD.**, 11700 Wright Rd., Lynwood, Calif.

## LOADERS

1. Tractor
  2. Underground
- **ALLIS-CHALMERS MFG. CO.**, Tractor Group, Milwaukee 1, Wis.
  - **ATHEY PRODUCTS CORP.**, 3631 W. 63rd St., Chicago 38, Ill.
  - **THE BAKER-AULING CO.**, 1250 W. 80th St., Cleveland, Ohio
  - **BONDED SCALE AND MACHINE CO.**, 2176 S. Third St., Columbus 7, Ohio
  - **BUILDERS EQUIPMENT CO.**, 4012 North Central Ave., Phoenix, Ariz.
  - **J. I. CASE COMPANY**, 700 State Street, Racine, Wisconsin
  - **DROTT MFG. CORP.**, 3841 W. Wisconsin Ave., Milwaukee 8, Wis.
  - **EIMCO CORP.**, 634 South 4th West, Salt Lake City, Utah
  - **GARDNER-DENVER CO.**, Quincy, Ill.
  - **GEO. HAISS MFG. CO., INC.**, Div. Pettibone Mulliken Corp., 350 Fifth Ave., New York 1, N.Y.
  - **THE FRANK O. HOUGH CO., DIV. OF INTERNATIONAL HARVESTER CO.**, 939 Sunnyside Ave., Libertyville, Ill.
  - **INTERNATIONAL HARVESTER CO.**, 180 N. Michigan Ave., Chicago 1, Ill.

- **THE JAEGER MACHINE CO.**, 550 W. Spring St., Columbus 16, Ohio
- **LESSMANN MFG. CO.**, (Div. of United Steel Bldg. Co.), Lewis Tower Bldg., Philadelphia, Pa.
- **LE ROI CO.**, 1706 S. 68th St., Milwaukee 14, Wisc.
- **THE OLIVER CORP.**, 400 W. Madison St., Chicago 6, Ill.
- **ROGERS IRON WORKS CO.**, Joplin, Mo.
- **TOWMOTOR CORP.**, 1226 E. 152nd St., Cleveland 10, Ohio
- **RICHARD P. WALSH CO.**, 30 Church St., New York, New York

## LOADERS, Block

- **BUILDERS EQUIPMENT COMPANY**, 4012 N. Central Avenue, Phoenix, Arizona

## LOCOMOTIVES

1. Diesel
  2. Electric
  3. Gasoline
  4. Oil (L.P.G.)
  5. Storage Battery
- **BALDWIN-LIMA-HAMILTON CORP.**, Edgystone Div., Philadelphia 42, Pa.
  - **DAVENPORT BESLER CORP.**, 2305 Rockingham Road, Davenport Iowa
  - **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.
  - **PLYMOUTH LOCOMOTIVE WORKS, DIV. OF THE FATE ROOT HEATH CO.**, Plymouth, Ohio
  - **VULCAN IRON WORKS**, 730 So. Main St., Wilkes-Barre, Pa.

## LOCOMOTIVES

1. Diesel-Electric
  2. Gasoline-Electric
  3. Oil (L.P.G.)-Electric
- **BALDWIN-LIMA-HAMILTON CORP.**, Edgystone Div., Philadelphia 42, Pa.
  - **DAVENPORT BESLER CORP.**, 2305 Rockingham Road, Davenport, Iowa
  - **DIFFERENTIAL STEEL CAR CO.**, Findlay, Ohio
  - **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.
  - **PLYMOUTH LOCOMOTIVE WORKS, DIV. OF THE FATE ROOT HEATH CO.**, Plymouth, Ohio
  - **VULCAN IRON WORKS**, 730 So. Main St., Wilkes-Barre, Pa.

## LOG WASHERS, Aggregates (see Scrubbers)

## LORRIES, WEIGH (see Weigh Lorries)

## LUBRICANTS, Grease, Oil, etc.

- **ALEMITE DIV., STEWART-WARNER CORP.**, 1826 Diversy Parkway, Chicago, Illinois
- **CITIES SERVICE OIL CO.**, Sixty Wall Tower, New York 3, N.Y.
- **FISKE BROS. REFINING CO., LUBRICATE DIV.**, 129 Lockwood St., Newark 5, N. J.
- **GULF OIL CORP., GULF REFINING CO.**, Gulf Bldg., Pittsburgh 30, Pa.

- **E. F. HOUGHTON & CO.**, 303 W. Lehigh Ave., Philadelphia 33, Pa.
- **NEW YORK & NEW JERSEY LUBRICANT CO.**, 292 Madison Ave., New York 17, N.Y.
- **PURE OIL CO.**, 35 E. Wacker Drive, Chicago, Illinois
- **SHELL OIL COMPANY**, 50 W. 30th St., New York, N.Y.
- **SINCLAIR REFINING CO.**, 600 Fifth Ave., New York 20, N.Y.
- **STANDARD OIL CO. OF CALIFORNIA**, 225 Bush St., San Francisco, Calif.
- **SUN OIL COMPANY**, 1608 Walnut St., Philadelphia 3, Pa.
- **SWAN-FINCH OIL CORP.**, 285 Madison Ave., New York 17, N.Y.
- **THE TEXAS COMPANY**, 135 East 42nd St., New York 17, N.Y.

## LUBRICANTS, Wire Rope

- **ALEMITE DIV., STEWART-WARNER CORP.**, 1826 Diversy Pkwy., Chicago 14, Ill.
- **AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP.**, 614 Superior Ave., N.W., Rockefeller Bldg., Cleveland 13, Ohio
- **FISKE BROS. REFINING CO., LUBRICATE DIV.**, 129 Lockwood St., Newark 5, N. J.
- **GULF OIL CORP., GULF REFINING CO.**, Gulf Bldg., Pittsburgh 30, Pa.
- **E. F. HOUGHTON & CO.**, 303 W. Lehigh Ave., Philadelphia 33, Pa.
- **JONES & LAUGHLIN STEEL CORP.**, 3 Gateway Center, Pittsburgh 30, Pa.
- **LESCHEN WIRE ROPE DIV., M. K. PORTER CO., INC.**, 5909 Kennerly Ave., St. Louis 12, Mo.
- **MACWHYTE COMPANY**, 2949-14th Ave., Kenosha, Wisc.
- **NEW YORK & NEW JERSEY LUBRICANT CO.**, 292 Madison Ave., New York 17, N.Y.
- **SAUERMAN BROS. INC.**, 620 S. 28th Ave., Bellwood, Illinois
- **SHELL OIL COMPANY**, 50 W. 30th St., New York, N.Y.
- **SINCLAIR REFINING CO.**, 600 Fifth Ave., New York 20, N.Y.
- **SWAN-FINCH OIL CORP.**, 285 Madison Ave., New York 17, N.Y.
- **THE TEXAS COMPANY**, 135 East 42nd St., New York 17, N.Y.

## LUBRICATING SYSTEMS

- **ALEMITE DIV., STEWART-WARNER CORP.**, 1826 Diversy Pkwy., Chicago 14, Ill.
- **THE FARVAL CORP.**, 3249 E. 80th St., Cleveland 4, Ohio
- **LINCOLN ENGINEERING CO.**, 3701 Natural Bridge Ave., St. Louis 20, Mo.
- **VICTOR EQUIPMENT CO.**, 844 Folsom St., San Francisco 7, Calif.

M

## MAGNETIC SEPARATORS

- **CESCO PRODUCTS**, Santa Rosa, Calif.
- **DINGS MAGNETIC SEPARATOR CO.**, 4740 West Electric Ave., Milwaukee 46, Wis.
- **THE HOMER MFG. CO., INC.**, Lima, Ohio
- **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio
- **H. B. LARGE ENGINEERING CO.**, 262 S. Parkwood Ave., Pasadena, California
- **PRATER PULVERIZER CO.**, 1515 S. 55th St., Cicero, Illinois
- **RADIO CORP. OF AMERICA, RCA VICTOR DIV.**, Front & Cooper Sts., Camden 2, N. J.
- **STEARNS MAGNETIC, INC.**, 675 S. 28th St., Milwaukee 46, Wis.

• A dot before name indicates ROCK PRODUCTS Advertiser



# DIRECTORY

## MASONRY COLORS (see Cement and Masonry Colors)

## MASONRY SAWS

- CHAMPION MFG. COMPANY, 2028 Washington Ave., St. Louis 3, Mo.
- CLIPPER MFG. CO., 2800 Warwick, Kansas City 8, Missouri
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- EVEREADY BRIKSAW CO., 1509 S. Michigan Blvd., Chicago 3, Ill.
- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.

## MEASURING DEVICES

1. Weight
2. Volumetric (See Batchers)

## METERS

1. Electric
  2. Water
  3. Moisture
  4. Other Fluids
- BAILEY METER CO., 1050 Ivanhoe Road, Cleveland 10, Ohio 2-3
  - C & W SALES CO., INC., 1490 Franks Lane, Menlo Park, California 3
  - COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington 2
  - CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo. 2
  - ROY DARDEN INDUSTRIES, INC., P.O. Box 95, Northside Branch, Atlanta, Georgia 3
  - THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass. 2-3
  - GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y. 1
  - THE HAYS CORP., 742 East 8th St., Michigan City 21, Ind. 3
  - INSTANT MOISTURE CONTROL DIV. OF COLORADO PREMIX CONCRETE CO., 1021 W. Mississippi, Denver, Colorado
  - NEPTUNE METER CO., 50 W. 30th St., New York 20, N.Y. 2-3
  - WESTINGHOUSE ELECTRIC CO., Gateway Bldg., Pittsburgh 30, Pa.

## MILLS, Grinding

1. Ball
  2. Compartment
  3. Laboratory
  4. Rod
  5. Roll Type
  6. Tube
- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wisc. 1-2-3-4-5-6
  - AMERICAN BRAKE SHOE COMPANY, 230 Park Avenue, New York 17, New York 1
  - AMERICAN PULVERIZER COMPANY, 1245 Macklind Avenue, St. Louis 10, Missouri 3
  - THE BABCOCK & WILCOX CO., 161 W. 42nd St., New York 17, N.Y. 1
  - BRADLEY PULVERIZER CO., 123 S. Third St., Allentown, Pa. A-5
  - THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 373 Madison Avenue, New York 22, New York 1
  - COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1313 N. Branch St., Chicago 22, Ill. 3

- DENVER EQUIPMENT CO., 1400 17th Street, Denver 17, Colo. 1-3-4-6
- THE FAIRFIELD ENG. CO., 324 Barnhart St., Marion, Ohio
- THE GALIGHER CO., 545 W. 8th South St., Salt Lake City 4, Utah 3
- GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo. 1
- HARDINGE CO., INC., 240 Arch St., York, Pa. 1-2-3-4-5-6
- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y. 1-2-3-4-5-6
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa 1
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio 1
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York 1-2-3-4-5-6
- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Pa.
- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo. 1-3-4-6
- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wisc. 1-2-3-4-6
- PATTERSON FOUNDRY & MACHINE CO., East Liverpool, Ohio 1
- F. L. SMITH & CO., 20 West 43rd St., New York 36, N.Y. 1-2-6
- SPROUT WALDRON & CO., INC., Muncy, Pa. 3
- THE STEARNS-ROGER MFG. CO., 1720 California St., Denver 2, Colo. 1-4
- STRAUB MFG. CO., INC., 8383 Balwin, Oakland 20, Calif. 1-3-4-6
- STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass. 3-5
- TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa. 1-2-4-6
- UNITED STATES STEEL CORP., 525 William Penn Place, Pittsburgh 30, Pa. 1
- UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa 1
- VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa. 1-6
- RICHARD P. WALSH CO., 30 Church St., New York, New York 1
- THE WEBB CORP., Webb City, Mo.
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif. 4
- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo. 3

## MILLS, Washing (see Scrubbers)

## MILLS, Hammer (see Crushers, Hammer)

## MIXER BODIES, Truck (see Bodies)

## MIXERS, Concrete (see Concrete Mixers)

## MIXERS, Plaster & Mortar

- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.
- CONCRETE MACHINERY CO., P.O. Drawer 60, Hickory, N.C.
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- GILSON BROTHERS CO., Fredonia, Wisc.
- THE JAEGER MACHINE CO., 330 W. Spring St., Columbus 16, Ohio
- TRUCK-MAN DIV., THE KNICKERBOCKER CO., 603 Liberty St., Jackson, Mich.
- KWIK MIX COMPANY, Port Washington, Wisc.
- MULTIPLEX MACHINERY CO., Div. of Multipack, Inc., Fremont St., Elmore, Ohio
- WORTHINGTON CORP., 426 Washington Ave., Harrison, N. J.

## MIXERS, Pugmill

- BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa
- GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio
- KWIK MIX COMPANY, Port Washington, Wisc.
- LINK-BELT CO., 307 N. Michigan Ave., Chicago 1, Ill.
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.
- STURTEVANT MILL CO., 102 Clayton St., Dorchester, Boston 22, Mass.
- RICHARD P. WALSH CO., 30 Church St., New York, New York

## MIXERS, Slurry (see Slurry Mixers)

## MONITORS, Hydraulic

- CHIKSAN COMPANY, 330 N. Panama Ave., Brea, California

## MORTAR COLORS (see Cement and Masonry Colors)

## MOTOR TRACTORS, Off- Highway

1. Diesel
  2. Gas
- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin 1-2
  - ALLIS-CHALMERS MFG. CO., Tractor Group, Milwaukee 1, Wisc. 2
  - CATERPILLAR TRACTOR CO., Peoria 8, Ill. 1
  - EUCLID DIV., GENERAL MOTORS CORP., 1361 Chardon Road, Cleveland 17, Ohio 1
  - INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill. 1-2
  - MACK TRUCKS, INC., Empire State Bldg., New York 1, N.Y. 1-2

THE YALE & TOWNE MFG. CO.,  
Roosevelt Blvd. & Haldeman Ave.,  
Philadelphia 15, Pa.  
1-2

## MOTOR TRUCK CON- CRETE MIXERS (see Bodies)

## MOTOR TRUCK DRIVES AND DIFFERENTIALS, Special

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- MARMON-HERRINGTON CO., INC., 1511 W. Washington St., Indianapolis 7, Ind.

## MOTOR TRUCKS, High- way

- CHEVROLET DIV., GENERAL MOTORS CORP., General Motors Bldg., Detroit 21, Mich.
- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- DODGE DIV., CHRYSLER CORP., 7900 Jos. Campeau St., Detroit 11, Mich.
- FORD MOTOR CO., 2674 Schoefer Road, Dearborn, Michigan
- GERLINGER CARRIER CO., Dallas, Ore.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- MACK TRUCKS, INC., Empire State Bldg., New York 1, N.Y.
- MEMPHIS EQUIPMENT CO., 766 South Third St., Memphis, Tennessee
- REO MOTORS, INC., INDUSTRIAL & MARINE ENGINE DIV., 1331 Reo Square, Lansing, Michigan
- THE WHITE MOTOR CO., 842 E. 79th St., Cleveland 1, Ohio

## MOTOR TRUCKS, Off- Highway End, Side, Bottom, Dump, etc.

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- ALLIS-CHALMERS MFG. CO., Tractor Group, Milwaukee 1, Wisc.
- CONVERTO MFG. CO., Cambridge City, Ind.
- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- DART TRUCK CO., 2623 Oak St., Kansas City 8, Mo.
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- EUCLID DIV., GENERAL MOTORS CORP., 1361 Chardon Road, Cleveland 17, Ohio
- THE GALION ALLSTEEL BODY CO., 605 S. Market Street, Galion, Ohio
- GERLINGER CARRIER CO., Dallas, Ore.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- KOEHRING COMPANY, 3026 W. Concordia Ave., Milwaukee 16, Wisc.
- LE TOURNEAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.
- MACK TRUCKS, INC., Empire State Bldg., New York 1, N.Y.
- MARMON-HERRINGTON CO., INC., 1511 W. Washington St., Indianapolis 7, Ind.
- THE WHITE MOTOR CO., 842 E. 79th St., Cleveland 1, Ohio
- THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Haldeman Ave., Philadelphia 15, Pa.

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# DIRECTORY

## MOTOR TRUCK TRACTORS, Highway

1. Diesel
2. Gasoline
- **COOK BROS. EQUIPMENT CO.**, 3334 San Fernando Road, Los Angeles 65, Calif.  
1—2
- **INTERNATIONAL HARVESTER CO.**, 180 N. Michigan Ave., Chicago 1, Ill.  
1—2
- **MACK TRUCKS, INC.**, Empire State Bldg., New York 1, N.Y.  
1—2
- **MARMON-HERRINGTON CO., INC.**, 1511 W. Washington St., Indianapolis 7, Ind.  
1—2
- **THE WHITE MOTOR CO.**, 842 E. 79th St., Cleveland 1, Ohio  
1—2

## MOTORS (see Electric Motors)

## N

## NOZZLES, Spray

- **AMERICAN BRAKE SHOE CO.**, 230 Park Avenue, New York 17, N.Y.
- **BINKS MFG. CO.**, 3144 Carroll Ave., Chicago, Illinois
- **BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071**, Boston 3, Massachusetts
- **CARLYLE RUBBER CO., INC.**, 62 Park Place, New York City 7, N.Y.
- **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.
- **DEISTER MACHINE CO.**, 1933 E. Wayne St., Fort Wayne 4, Ind.
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.
- **SPRAYING SYSTEMS CO.**, 3201 Randolph St., Bellwood, Illinois

## NOZZLES, Washing

- **BINKS MFG. CO.**, 3144 Carroll Ave., Chicago, Illinois
- **BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071**, Boston 3, Mass.
- **CARLYLE RUBBER CO., INC.**, 62 Park Place, New York City 7, New York
- **THE DEISTER CONCENTRATOR CO.**, 935 Glasgow Ave., Fort Wayne 1, Ind.
- **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa
- **SPRAYING SYSTEMS CO.**, 3201 Randolph St., Bellwood, Illinois

## O

## OFFBEARERS, Power, Concrete Block

- **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio
- **BERGEN MACHINE & TOOL CO., INC.**, 189 Franklin Avenue, Nutley 10, New Jersey
- **MULTIPLEX MACHINERY CO.**, Div. of Multipack, Inc., Fremont St., Elmore, Ohio
- **THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.
- **PRASCHAK MACHINE CO.**, Marshfield, Wis.
- **STEARNS MFG. CO., INC.**, 600 E. Beecher, Adrian, Mich.

## OIL BURNERS

- **THE BABCOCK & WILCOX COMPANY**, 161 East 42nd St., New York 17, N.Y.

- **CLEAVER-BROOKS CO.**, 326 E. Keefe Ave., Milwaukee 12, Wisc.
- **COEN CO.**, 40 Boardman Place, San Francisco, Calif.
- **HAUCK MANUFACTURING COMPANY**, 124-136 Tenth Street, Brooklyn 15, New York
- **JOHNSTON MFG. CO.**, 2825 E. Hennepin Ave., Minneapolis 13, Minn.
- **LITTLEFORD BROS., INC.**, 453 E. Pearl St., Cincinnati 2, Ohio
- **NATIONAL AIROIL BURNER CO.**, 1298 E. Sedgley Ave., Philadelphia 34, Pa.
- **F. L. SMITH & CO.**, 20 West 43rd St., New York 36, N.Y.

## OIL FILTERS

- **HAUCK MANUFACTURING COMPANY**, 124-136 Tenth Street, Brooklyn 15, New York
- **LINCOLN ENGINEERING CO.**, 5701 Natural Bridge Ave., St. Louis 20, Mo.
- **MARVEL ENGINEERING CO.**, 7227 N. Hamlin Ave., Chicago, Illinois
- **WINSLOW ENGINEERING CO.**, 4069 Hollis St., Oakland, Calif.

## OIL, Lubricants (see Lubricants)

## P

## PALLETS, Concrete Products

1. Steel
2. Wood
3. Other
- **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio  
1—2—3
- **BUILDERS STRUCTURAL STEEL CORP.**, 2880-2912 East 34th St., Cleveland 15, Ohio  
1
- **CHASE CONCRETE MACHINERY CO.**, 94 Grandview Ave., Buffalo 23, N.Y.  
1
- **THE COMMERCIAL SHEARING & STAMPING CO.**, 1775 Logan Ave., P. O. Box 719, Youngstown 1, Ohio  
1
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington  
1—2—3
- **CONCRETE MACHINERY CO., P.O. Drawer 60**, Hickory, N.C.  
3
- **FABRICATORS STEEL CORP.**, 3404 New River Road, P.O. Box 87, Bladensburg, Md.
- **FABRICATORS STEEL & MFG. CORP.**, 850 East 133rd St., New York 54, N.Y.
- **FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.  
1—2
- **L. B. FOSTER CO.**, P.O. Box 1647, Pittsburgh 30, Pa.  
1
- **GENERAL ENGINES CO., INC.**, 307 Hunter St., Gloucester City, N.J.  
1—3
- **MILLER EQUIPMENT CO., INC.**, P. O. Box 1566, Salisbury, No. Car.  
1
- **MULTIPLEX MACHINERY CO.**, Div. of Multipack, Inc., Fremont St., Elmore, Ohio  
1—2—3
- **THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.  
1
- **PRASCHAK MACHINE CO.**, Marshfield, Wis.  
1
- **WITTELMANN MACHINERY CO.**, Farmingdale, N.J.  
1

## PALLET CLEANERS

- **W. A. ANTHONY ENG. CO.**, Boro, Ohio
- **BERGEN MACHINE & TOOL COMPANY, INC.**, 189 Franklin Avenue, Nutley 10, New Jersey
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.
- **SPRINGFIELD PALLET & CLEANER MFG. CO.**, 1800 N. Limestone St., Springfield, Ohio

## PANEL BOARDS, Electric

- **ALLIS-CHALMERS MFG. CO.**, 973 So. 70th St., Milwaukee 1, Wisc.
- **JOHNS-MANVILLE**, 22 East 40th St., New York 16, N.Y.
- **M & M ENGR. CORP.**, 1017 W. 23rd St., Indianapolis 23, Ind.
- **PANALARM DIV. OF PANELLIT INC.**, 7401 N. Hamlin, Skokie, Illinois
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## PANS, GRINDING, Wet and Dry

- **EAGLE IRON WORKS**, 137 Holcomb Ave., Des Moines 4, Iowa
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York
- **McLANAHAN & STONE CORP.**, McAnahan Bldg., Hollidaysburg, Pa.

## PANS, APRON, CONVEYOR (see Conveyors, Apron)

## PERFORATED METAL (see Screen Plate)

## PHOTO-ELECTRIC CELLS

- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## PILLOW BLOCKS (see Blocks, Pillow)

## PIPE, Asbestos

- **JOHNS-MANVILLE**, 22 E. 40th St., New York 16, N.Y.

## PIPE, Dredge Standard

- **NAYLOR PIPE CO.**, 1237 E. 92nd St., Chicago 19, Ill.
- **TAYLOR FORGE & PIPE WORKS**, P.O. Box 483, Chicago 90, Ill.

## PIPE FITTINGS

- **BLACK BROS. CORP.**, 503 9th Ave., Mendota, Ill.
- **L. B. FOSTER CO.**, P.O. Box 1647, Pittsburgh 30, Pa.
- **HAYNES STELLITE CO.**, 723 S. Lindsay, Kokomo, Ind.
- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois
- **NAYLOR PIPE CO.**, 1237 E. 92nd St., Chicago 19, Ill.
- **TAYLOR FORGE & PIPE WORKS**, P.O. Box 483, Chicago 90, Ill.

## PIPE, Rubber Lined

- **GOODALL RUBBER CO.**, 403 Whitehead Road, Trenton 4, N.J.
- **B. F. GOODRICH CO.**, 500 South Main St., Akron 11, Ohio
- **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois
- **NAYLOR PIPE CO.**, 1237 E. 92nd St., Chicago 19, Ill.
- **PIONEER RUBBER MILLS**, 520 Fourth St., San Francisco 11, Calif.
- **RAYBESTOS-MANHATTAN, INC.**, MANHATTAN RUBBER DIV., 92

Townsend St., Passaic, N. J.

- **UNITED STATES RUBBER CO.**, 1230 Ave. of the Americas, New York 20, N.Y.

## PIPE, Steel, (Spiralwelded)

- **NAYLOR PIPE CO.**, 1237 E. 92nd St., Chicago 19, Ill.

## PLANERS, Shale

- **EAGLE IRON WORKS**, 137 Holcomb Ave., Des Moines 4, Iowa
- **NAYLOR PIPE CO.**, 1237 E. 92nd St., Chicago 19, Ill.

## PLASTER MIXERS (see Mixers, Plaster)

## PNEUMATIC CONVEYORS (see Conveyors, Air)

## POLISHING MACHINES, Concrete

- **CHICAGO PNEUMATIC TOOL CO.**, 6 E. 44th St., New York 17, N.Y.

## PONTOONS, Dredge and Pipe

- **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.
- **NAYLOR PIPE CO.**, 1237 E. 92nd St., Chicago 19, Ill.

## PORTABLE AGGREGATES PLANTS, Crushing and Screening Plants (see Crushing and Screening Plants, Mobile Mounted)

## POWDER, Blasting (see Explosives and Dynamite)

## POWER STATION EQUIPMENT

- **BAILEY METER COMPANY**, 1050 Ivanhoe Road, Cleveland 10, Ohio
- **CATERPILLAR TRACTOR CO.**, Peoria 8, Illinois
- **DRAVO CORP.**, Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.
- **JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

## PRECIPITATORS, Dust, Electrical (see Dust Collectors, Electrical)

## PREHEATERS, for Kilns, etc.

- **FULLER CO.**, Catsaqua, Pa.
- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

## PRESTRESSING WIRE

- **UNION WIRE ROPE CO.**, 21st & Manchester Rd., Kansas City, Missouri

## PROPORTIONING EQUIPMENT (see Batchers)

## PROTECTIVE COATINGS

- **GOODALL RUBBER CO.**, 403 Whitehead Road, Trenton 4, N.J.
- **A. C. HORN CO., INC.**, 10th St. & 44th Ave., Long Island City 1, N.Y.

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# DIRECTORY

**REARDON INDUSTRIES, INC.**, 2837 Stanton Ave., Cincinnati 6, Ohio  
**RUST-OLEUM CORP.**, Evanston, Ill.

## PULLERS, Car (see Car Movers)

## PULLERS, Gear, Wheel and Bearing

• **ARMSTRONG-BRAY & COMPANY**, 5366 Northwest Highway, Chicago 30, Illinois  
**RODGERS HYDRAULIC, INC.**, 7401 Walker St., Minneapolis 16, Minn.

## PULLEYS, Clutch

• **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.  
• **DODGE MFG. CORP.**, 1952 William St., Mishawaka, Ind.  
• **LINK-BELT CO.**, 307 N. Michigan Ave., Chicago 1, Ill.

## PULLEYS, Conveyor and Elevator

• **THE AMERICAN PULLEY CO.**, 4200 Wissahickon Ave., Philadelphia 29, Pa.  
• **BARBER-GREENE COMPANY**, 400 N. Highland Avenue, Aurora, Ill.  
• **BAUGHMAN MFG. CO., INC.**, Shipman Road, Jerseyville, Illinois  
**BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.  
**BONDED SCALE AND MACHINE CO.**, 2176 S. Third St., Columbus 7, Ohio  
• **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.  
• **DODGE MFG. CORP.**, 1952 William St., Mishawaka, Ind.  
• **FANNING SCHUETT ENGINEERING CO.**, 4325 N. Third Street, Philadelphia 40, Pa.  
• **HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn.  
• **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa  
• **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio  
• **W. A. JONES FOUNDRY & MACHINE CO.**, 4401 Roosevelt Road, Chicago 24, Ill.  
• **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.  
• **E. F. MARSH ENGR. CO.**, 4324 W. Clayton Ave., St. Louis 10, Mo.  
• **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.  
**ROGERS IRON WORKS CO.**, Joplin, Mo.  
**SPROUT WALDRON & CO., INC.**, Muncy, Pa.  
• **WEBSTER MFG. CO.**, 1100 W. Davis St., Tiffin, Ohio  
**WOODDALE MACHINE & MFG. CO.**, Commercial Ave., Wooddale, Ill.  
**T. B. WOODS SONS CO.**, 3th Ave., Chambersburg, Pa.  
• **YUBA MFG. CO.**, 331 California St., San Francisco 4, Calif.

## PULLEYS, Magnetic (see Magnetic Separators)

## PULP DENSITY CONTROLLERS

• **THE MINE & SMELTER SUPPLY CO.**, 17th & Blake, Denver 17, Colo.

## PULVERIZERS FUEL SYSTEMS (see Coal Pulverizing Equipment, Direct Firing)

## PULVERIZERS (see Mills)

## PUMPS, Air Lift

1. Cement  
2. Slurry  
3. Water  
• **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.  
• **CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York 17, N.Y.  
• **FULLER CO.**, Catasauqua, Pa.  
**THE GALIGHER CO.**, 545 W. 8th South St., Salt Lake City 4, Utah  
• **GARDNER-DENVER CO.**, Quincy, Ill.  
1—2—3  
**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
2—3  
• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York  
1—2—3  
• **F. L. SMIDTH & CO.**, 20 West 43rd St., New York 36, N.Y.  
• **WORTHINGTON CORP.**, 426 Washington Ave., Harrison, N. J.

## PUMPS, Asphalt

• **AMERICAN BRAKE SHOE COMPANY**, 230 Park Avenue, New York 17, New York  
• **HETHERINGTON & BERNER, INC.**, 701 Kentucky Ave., Indianapolis 7, Ind.

## PUMPS, Cement

• **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.  
• **FULLER CO.**, Catasauqua, Pa.  
• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York  
• **MORRIS MACHINE WORKS**, 20 E. Genesee St., Baldwinsville, N.Y.  
• **F. L. SMIDTH & CO.**, 20 West 43rd St., New York 36, N.Y.  
**RICHARD P. WALSH CO.**, 30 Church St., New York, New York  
• **A. R. WILFLEY & SONS, INC.**, 635 18th St. (Denham Bldg.), Denver, Colo.

## PUMPS, Concrete

• **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.  
**RICHARD P. WALSH CO.**, 30 Church St., New York, New York

## PUMPS, Dredge

• **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc.  
• **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.  
• **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.  
• **HETHERINGTON & BERNER, INC.**, 701 Kentucky Ave., Indianapolis 7, Ind.  
**KANSAS CITY HAY PRESS CO.**, 815 Woodweather St., Kansas City, Mo.  
• **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Ill.  
• **MORRIS MACHINE WORKS**, 20 E. Genesee St., Baldwinsville, N.Y.  
• **NAGLE PUMPS, INC.**, 1269 Center Ave., Chicago Heights, Ill.  
**PEKOR IRON WORKS, Ft. of E. 9th Ave., Columbus, Ga.**  
• **PETITBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.  
• **THOMAS FOUNDRIES, INC.**, 3800 10th Ave., P.O. Box 1111, Birmingham 1, Ala.  
**RICHARD P. WALSH CO.**, 30 Church St., New York, New York

• **YUBA MFG. CO.**, 331 California St., San Francisco 4, Calif.

## PUMPS, Sand

• **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc.  
• **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.  
• **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.  
• **DENVER EQUIPMENT CO.**, 1400 17th Street, Denver 17, Colo.  
**THE GALIGHER CO.**, 545 W. 8th South St., Salt Lake City 4, Utah  
• **HETHERINGTON & BERNER, INC.**, 701 Kentucky Ave., Indianapolis 7, Ind.  
**INGERSOLL RAND CO.**, Phillipsburg, Pennsylvania  
**KANSAS CITY HAY PRESS CO.**, 815 Woodweather St., Kansas City, Mo.  
• **KROGH PUMPS**, 575 Harrison St., San Francisco, Calif.  
• **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.  
• **MORRIS MACHINE WORKS**, 20 E. Genesee St., Baldwinsville, N.Y.  
• **NAGLE PUMPS, INC.**, 1269 Center Ave., Chicago Heights, Ill.  
**PEKOR IRON WORKS, Ft. of E. 9th Ave., Columbus, Ga.**  
• **PETITBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.  
• **SMITH ENGINEERING WORKS**, 332 E. Capitol Dr., Milwaukee 12, Wis.  
• **THOMAS FOUNDRIES, INC.**, 3800 10th Ave., P.O. Box 1111, Birmingham 1, Ala.  
**RICHARD P. WALSH CO.**, 30 Church St., New York, New York  
• **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.  
• **A. R. WILFLEY & SONS, INC.**, 635 18th St. (Denham Bldg.), Denver, Colo.  
• **YUBA MFG. CO.**, 331 California St., San Francisco 4, Calif.

## PUMPS, Slurry

**THE ALLEN-SHERMAN-HOFF CO.**, 259 E. Lancaster Ave., Wynnewood, Pennsylvania  
• **ALLIS-CHALMERS MFG. CO.**, 975 South 70th Street, Milwaukee 1, Wisconsin  
• **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.  
• **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.  
**DEMING CO.**, Salem, Ohio  
• **DENVER EQUIPMENT CO.**, 1400 17th St., Denver 17, Colo.  
• **DORR-OLIVER, INC.**, Barry Place, Stamford, Conn.  
**THE GALIGHER CO.**, 545 W. 8th South St., Salt Lake City 4, Utah  
• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York  
• **KOEHRING COMPANY**, 3026 W. Concordia Ave., Milwaukee 16, Wis.  
• **KROGH PUMPS**, 575 Harrison St., San Francisco, Calif.  
• **MCCALLY PITTSBURG MFG. CORP.**, W. Third St., Pittsburgh, Kan.  
• **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Illinois  
• **MORRIS MACHINE WORKS**, 20 E. Genesee St., Baldwinsville, N.Y.  
• **NAGLE PUMPS, INC.**, 1269 Center Ave., Chicago Heights, Ill.  
• **PETITBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.  
**QUINN-ROGERS MFG. CO.**, 345 Burkhardt Court, Forest Park, Ill.  
• **F. L. SMIDTH & CO.**, 20 West 43rd St., New York 36, N.Y.  
• **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

• **A. R. WILFLEY & SONS, INC.**, 635 18th St. (Denham Bldg.), Denver, Colo.

## PUMPS

1. Centrifugal  
2. Deep Well  
3. Diaphragm  
4. Rubber-Lined  
5. Vacuum  
6. Hydraulic  
• **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wisc.  
1—4—5  
• **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.  
1—2  
• **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.  
1—4  
• **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.  
1—3  
• **CHICAGO PNEUMATIC TOOL CO.**, 6 East 44th St., New York 17, N.Y.  
5  
**THE COMMERCIAL SHEARING & STAMPING CO.**, 1775 Logan Ave., P.O. Box 719, Youngstown 1, Ohio  
8  
**DEMING CO.**, Salem, Ohio  
1—2—4  
• **DENVER EQUIPMENT CO.**, 1400 17th St., Denver 17, Colo.  
1—3—4  
• **DORR-OLIVER, INC.**, Barry Place, Stamford Conn.  
8  
**ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 25th Ave., Portland 10, Ore.  
1  
• **FOON MACHINERY & CHEMICAL CORP., PEERLESS PUMP DIV.**, 301 W. Ave. 26, Los Angeles 31, Calif.  
1—2  
• **FULLER CO.**, Catasauqua, Pa.  
5  
**THE GALIGHER CO.**, 545 W. 8th South St., Salt Lake City 4, Utah  
1—4  
• **GARDNER-DENVER CO.**, Quincy, Ill.  
1—5  
**GAR WOOD IND., INC.**, Wayne Division, Wayne, Mich., and Richmond, Calif.  
6  
**GORMAN-RUPP CO.**, 305 Bowman St., Mansfield, Ohio  
1—3—4—6  
**INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.  
1—3—5—6  
• **THE JAEGER MACHINE CO.**, 550 W. Spring St., Columbus 16, Ohio  
1—3  
**KANSAS CITY HAY PRESS CO.**, 815 Woodweather St., Kansas City, Mo.  
4  
• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York  
1—3—5—6  
• **KROGH PUMPS**, 575 Harrison St., San Francisco, Calif.  
8  
• **MCCALLY PITTSBURG MFG. CORP.**, W. Third St., Pittsburgh, Kan.  
1—4  
• **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.  
1  
• **MORRIS MACHINE WORKS**, 20 E. Genesee St., Baldwinsville, N.Y.  
1  
• **NAGLE PUMPS, INC.**, 1269 Center Ave., Chicago Heights, Ill.  
1  
**NATIONAL LIFT CO.**, 800 Lowell St., Ypsilanti, Mich.  
6  
**PEKOR IRON WORKS, Ft. of E. 9th Ave., Columbus, Ga.**  
1

• A dot before name indicates ROCK PRODUCTS Advertiser



## DIRECTORY

• **PETTIBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 31, Ill.

• **RODDERS HYDRAULIC INC.**, 7401 Walker St., Minneapolis 16, Minn.

• **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

• **A. R. WILFLEY & SONS, INC.**, 635 18th St. (Denham Bldg.), Denver, Colo.

• **WORTHINGTON CORP.**, 426 Washington Ave., Harrison, N. J.

• **YUBA MFG. CO.**, 351 California St., San Francisco 4, Calif.

### PYROMETERS

• **BAILEY METER CO.**, 1090 Ivanhoe Road, Cleveland 10, Ohio

• **CAMBRIDGE INSTRUMENT CO., INC.**, 3778 Grand Central Terminal, New York 17, N.Y.

• **THE FOXBORO CO.**, 38 Neponset Ave., Foxboro, Mass.

• **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.

• **F. L. SMITH & CO.**, 20 West 42nd St., New York 36, N.Y.

R

### RACKS, Curing, Concrete Masonry

• **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio

• **BUILDERS STRUCTURAL STEEL CORP.**, 2880-2912 East 34th St., Cleveland 13, Ohio

• **THE CHASE FOUNDRY & MFG. CO.**, 2800 Parsons Avenue, Columbus 7, Ohio

• **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington

• **FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.

• **GENERAL ENGINES CO., INC.**, 307 Hunter St., Gloucester City, N. J.

• **THE KIRK & BLUM MFG. CO.**, 3120 Farrer St., Cincinnati 9, Ohio

• **MOORE DRY KILN CO.**, 1220 W. State St., Jacksonville 1, Fla.

• **MULTIPLEX MACHINERY CO.**, Div. of Multipack, Inc., Fremont St., Elmore, Ohio

• **THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.

• **TRUAX MACHINE & TOOL CO.**, 16 Michigan St., Seattle 8, Wash.

• **WITTMANN MACHINERY CO.**, Farmingdale, N. J.

### RAILS, Relay

• **L. B. FOSTER CO.**, P.O. Box 1647, Pittsburgh 30, Pa.

• **R. C. STANHOPE, INC.**, 60 E. 42nd St., New York, N.Y.

### RAILWAY, Industrial Equipment

• **BALDWIN-LIMA-HAMILTON CORP.**, Eddystone Corp., Philadelphia 42, Pa.

• **THE BUGA DIV., ALLIS-CHALMERS MFG. CO.**, 154th & Commercial, Harvey, Illinois

• **L. B. FOSTER CO.**, P.O. Box 1647, Pittsburgh 30, Pa.

• **R. C. STANHOPE, INC.**, 60 E. 42nd St., New York, N.Y.

### READY-MIXED CONCRETE PLANTS (see Batching Plants)

### READY MIXED TRUCKS (see Bodies, Ready Mixed Concrete)

### RECORDERS, Concrete Batching

• **THE FOXBORO CO.**, 38 Neponset Ave., Foxboro, Mass.

• **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.

• **SCIENTIFIC CONCRETE SERVICE CORP.**, 724 Salem Ave., Elizabeth 3, N. J.

### RECORDERS

1. Draft
2. Pressure
3. Temperature
4. Moisture

• **BAILEY METER CO.**, 1050 Ivanhoe Road, Cleveland 10, Ohio

• **C & W SALES CO.**, 1490 Franks Lane, Menlo Park, California

• **THE FOXBORO CO.**, 38 Neponset Ave., Foxboro, Mass.

• **INSTANT MOISTURE CONTROL DIV. OF COLORADO PREMIX CONCRETE CO.**, 1021 W. Mississippi, Denver, Colorado

• **THE HAYS CORP.**, 742 East 8th St., Michigan City 21, Ind.

### RECTIFIERS, Electric

• **ALLIS-CHALMERS MFG. CO.**, 973 South 70th Street, Milwaukee 1, Wisconsin

• **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.

• **SYNTRON COMPANY**, 450 Lexington Ave., Homer City, Pa.

• **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

### REFRACTORIES, Block, Brick, Insulation

• **THE BABCOCK & WILCOX CO.**, 161 W. 42nd St., New York 17, N.Y.

• **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 25th Ave., Portland 10, Ore.

• **GENERAL REFRACTORIES CO.**, 1520 Locust St., Philadelphia 2, Pa.

• **A. P. GREEN FIRE BRICK CO.**, 1108 E. Breckenridge St., Mexico, Mo.

• **HARRISON-WALKER REFRACTORIES CO.**, 1800 Farmers Bank Bldg., Pittsburgh 22, Pa.

• **JOHNS-MANVILLE**, 22 E. 40th St., New York 16, N.Y.

• **KAISER ALUMINUM & CHEMICAL SALES, INC.**, 1924 Broadway, Oakland, Calif.

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

• **LACLUDE-CHRISTY CO., DIV. OF H. K. PORTER CO., INC.**, 2000 Hampton Ave., St. Louis, Mo.

• **NATURA STONE CO.**, 4213 Graveland Ave., Baltimore, Maryland

• **PIBRICO CO.**, 1800 N. Kingsbury St., Chicago 14, Illinois

• **RICHARD C. REMMY SON CO.**, 3003 Hedley St., Philadelphia 37, Pa.

### REGULATORS, Feed Water

• **THE HAYS CORP.**, 742 East 8th St., Michigan City 21, Ind.

### REGULATORS, Draft, Pressure, Temperature (see Controls)

### REGULATORS, Voltage

• **ALLIS-CHALMERS MFG. CO.**, 973 So. 70th St., Milwaukee 1, Wisc.

• **ELECTRIC MACHINERY MFG. CO.**, 800 Central Ave., Minneapolis 13, Minn.

• **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.

### RESPIRATORS

• **GENERAL SCIENTIFIC EQUIPMENT CO.**, 2735 W. Huntingdon St., Philadelphia 32, Pa.

• **MINE SAFETY APPLIANCES CO.**, 201 N. Braddock Ave., Pittsburgh 8, Pa.

• **WILLSON PRODUCTS, INC.**, Reading, Pa.

### REVOLUTION COUNTERS (see Tachometers)

### REVOLVING CRANES (see Derricks, Stiffleg or Guy)

### RHEOSTATS

• **ATLAS POWDER COMPANY**, Wilmington 99, Delaware

• **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.

### ROCK SPLITTERS, for Stone-Faced Masonry

• **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Avenue, Columbus 12, Ohio

• **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington

• **FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.

• **INGERSOLL-RAND CO.**, 11 Broadway, New York 4, N.Y.

• **TRUAX MACHINE & TOOL CO.**, 16 Michigan St., Seattle 8, Wash.

### ROCK WOOL CUPOLAS AND EQUIPMENT

• **HARRISON-WALKER REFRACTORIES CO.**, 1800 Farmers Bank Bldg., Pittsburgh 22, Pa.

• **ROCK WOOL ENGINEERING & EQUIPMENT CO.**, 79 East Main, Wabash, Indiana

• **MARION METAL WORKS**, Cheney at Jacobs, Marion, Ohio

• **WHITING CORP.**, Harvey, Ill.

### RODS, for Grinding Mills

• **ALLIS-CHALMERS MFG. CO.**, 973 So. 70th St., Milwaukee 1, Wisc.

• **AMERICAN FORGE**, Niles, Calif.

• **THE COLORADO FUEL AND IRON CORP.**, Continental Oil Building, Denver 2, Colorado

• **THE COLORADO FUEL AND IRON CORP.**, Wickwire Spencer Steel Division, 575 Madison Avenue, New York 22, New York

• **DENVER EQUIPMENT CO.**, 1400 17th St., Denver 17, Colo.

• **HARDINGE CO., INC.**, 240 Arch St., York, Pa.

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

• **SHEFFIELD STEEL CORP.**, Div. of Armae Steel, Sheffield Station, Kansas City 3, Mo.

### RODS, Welding, Hard-facing (see Welding Rods, Hard-facing)

### RODS, Welding (see Welding Rods and Electrodes)

### ROLLER BEARINGS (see Bearings)

### ROOFING AND SIDING, Industrial

• **THE CELOTEX CORP.**, 120 S. La Salle St., Chicago 3, Ill.

• **CHASE BAG CO.**, (Gen. Sales Office), 309 W. Jackson Blvd., Chicago 6, Ill.

• **COLUMBIA GENEVA STEEL DIV., United States Steel Corp.**, Equitable Life Bldg., San Francisco, Calif.

• **JOHNS-MANVILLE**, 22 East 40th St., New York 16, N.Y.

• **UNITED STATES STEEL CORP.**, 525 William Penn Place, Pittsburgh 30, Pa.

### ROPE, Wire (see Wire Rope)

### RUBBER LININGS (see Chute Linings, Rubber)

S

### SAFETY EQUIPMENT, Goggles, Shoes, etc.

• **A & A MFG. CO.**, 2017 W. Clybourn St., Milwaukee 3, Wisc.

• **E. D. BULLARD CO.**, 275 Eighth St., San Francisco 3, Calif.

• **CALUMET STEEL CASTINGS CORP.**, 1636 Summer St., Hammond, Ind.

• **CHICAGO EYE SHIELD CO.**, 2300 Warren Blvd., Chicago, Illinois

• **EDMONT MFG. CO.**, Coshacton, Ohio

• **GENERAL SCIENTIFIC EQUIPMENT CO.**, 2735 W. Huntingdon St., Philadelphia 32, Pa.

• **GOODALL RUBBER CO.**, 403 Whitehead Road, Trenton 4, N. J.

• **B. F. GOODRICH CO.**, 500 South Main St., Akron 11, Ohio

• **F. R. HANNON & SONS**, 1605 Waynesburg Road S.E., Canton 7, Ohio

• **JACKSON PRODUCTS, INC.**, 31739 Mound Road, Warren, Mich.

• **JOHNS-MANVILLE**, 22 East 40th St., New York 16, N.Y.

• **MINE SAFETY APPLIANCES CO.**, 201 N. Braddock Ave., Pittsburgh 8, Pa.

• **THE SURETY RUBBER CO.**, Carrollton, Ohio

• **WILLSON PRODUCTS, INC.**, Reading, Pa.

### SAMPLING EQUIPMENT

• **DENVER EQUIPMENT CO.**, 1400 17th St., Denver 17, Colo.

• **THE GALIGHER CO.**, 545 W. 8th South St., Salt Lake City 4, Utah

• **HARDINGE CO., INC.**, 240 Arch St., York, Pa.

• **STURTEVANT MILL CO.**, 102 Clay-ton St., Dorchester, Boston 22, Mass.

### SAND BLAST MACHINES

• **PANGBORN CORP.**, Pangborn Blvd., Hagerstown, Md.

### SAND DRAGS (see Sand Recovery Machinery)

### SAND-LIME BRICK MACHINERY (see Brick Machinery)

### SAND RECOVERY MACHINERY, Cones, Classifiers, Dewaterers, Drags, etc.

• **ALLIS-CHALMERS MFG. CO.**, 973 South 70th Street, Milwaukee 1, Wisconsin

• **AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO.**, 389 E. 14th St., Chicago Heights, Ill.

• **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.

• A dot before name indicates ROCK PRODUCTS Advertiser



# DIRECTORY

- BONDED SCALE AND MACHINE CO., 2176 S. Third St., Columbus 7, Ohio
- COLORADO IRON WORKS, 1624 17th St., Denver, Colorado
- THE DEISTER CONCENTRATOR CO., 935 Glasgow Ave., Fort Wayne 1, Ind.
- DEISTER MACHINE CO., 1933 E. Wayne St., Fort Wayne 4, Ind.
- DENVER EQUIPMENT CO., 1400 17th St., Denver 17, Colo.
- DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 4838 S. Halstead, Chicago, Illinois
- DORR-OLIVER, INC., Barry Place, Stamford, Conn.
- EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa
- EQUIPMENT ENGINEERS, INC., 41 Sutter St., San Francisco 4, Calif.
- FULLER CO., Catsaqua, Pa.
- GENERAL AMERICAN TRANSPORTATION CORP., 135 S. La Salle St., Chicago 90, Ill.
- HARDINGE CO., INC., 240 Arch St., York, Pa.
- HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- JACKSON & CHURCH CO., 321 N. Hamilton St., Saginaw, Mich.
- JEFFREY MANUFACTURING CORP., 935 North 4th St., Columbus 16, Ohio
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- McLANAHAN & STONE CORP., McLANAHAN Bldg., Hollidaysburg, Pa.
- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.
- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.
- PIONEER ENGINEERING WORKS, INC., 1315 Central Ave. N.E., Minneapolis 13, Minn.
- ROGERS IRON WORKS CO., Joplin, Mo.
- SAUERMAN BROS., INC., 620 S. 28th Ave., Bellwood, Illinois
- SMITH ENGINEERING WORKS, 532 East Capitol Dr., Milwaukee 12, Wis.
- SEPARATOR DIV., SOUTHWESTERN ENGINEERING CO., 4800 S. Santa Fe Ave., Los Angeles 58, Calif.
- STRAUS MFG. CO., INC., 8383 Baldwin, Oakland, Calif.
- STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass.
- UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa
- UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- WEBSTER MFG. CO., 1100 West Davis St., Tiffin, Ohio
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.
- CHARLES E. WOOD, 906 N. Water St., Milwaukee, Wis.

## SCALES, Batching (see Batches)

## SCALES, Conveyor (see Feeders)

## SCALES, Hopper

- BEAUMONT BIRCH CO., 1905 Race St., Philadelphia 2, Pa.
- BUTLER BIN CO., 945 Blackstone Ave., Waukegan, Wis.

- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- THE HOWE SCALE CO., Rutland, Vt.
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N.J.
- SCIENTIFIC CONCRETE SERVICE CORP., 724 Salem Ave., Elizabeth 3, N.J.
- STREETER-AMET CO., 4101 N. Ravenswood Ave., Chicago 13, Ill.
- THURMAN MACHINE CO., 254 E. Long St., Columbus, Ohio

## SCALES, Laboratory

- THE HOWE SCALE CO., Rutland, Vt.
- HUMBOLDT MFG. CO., 2014 N. Whipple St., Chicago 47, Ill.

## SCALES, Lorry (see Weigh Lorries)

## SCALES, Proportioning (see Batches)

## SCALES, Truck, Railway

- BONDED SCALE AND MACHINE CO., 2176 S. Third St., Columbus 7, Ohio
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- THE HOWE SCALE CO., Rutland, Vt.
- STREETER-AMET CO., 4101 N. Ravenswood Ave., Chicago 13, Ill.

## SCRAPERS, Power Drag (see Cable Excavators)

## SCRAPERS, Tractor

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- ALLIS-CHALMERS MFG. CO., Tractor Group, Milwaukee 1, Wisc.
- CATERPILLAR TRACTOR CO., Peoria 8, Ill.
- EUCLED DIV., GENERAL MOTORS CORP., 1361 Chardon Road, Cleveland 17, Ohio
- GLEDHILL ROAD MACHINERY CO., Gallion, Ohio
- LE TOURNEAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- WOOLDRIDGE MFG. CO., Hendy Ave., Sunnyvale, Calif.

## SCREEN CLOTH, Woven-Wire (see Wire Cloth)

## SCREEN HEATERS

- THE DEISTER CONCENTRATOR CO., 935 Glasgow Ave., Fort Wayne 1, Ind.
- DEISTER MACHINE CO., 1933 E. Wayne St., Fort Wayne 4, Ind.
- F. R. HANNON & SONS, 1605 Waynesburg S.E., Canton 7, Ohio
- THE W. S. TYLER CO., 3615 Superior Ave., Cleveland 14, Ohio
- UNIVERSAL VIBRATING SCREEN CO., Deane Blvd., & St. Paul RR., Racine, Wis.

## SCREEN PLATE, Perforated

- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- CHICAGO PERFORATING CO., 2445 W. 24th Pl., Chicago 8, Ill.
- THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado
- THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 373 Madison Avenue, New York 22, New York
- CROSS ENGINEERING CO., Carbondale, Pa.
- HARRINGTON & KING PERFORATING CO., 5650 Fillmore St., Chicago 44, Illinois
- HENDRICK MFG. CO., 39 Dundaff St., Carbondale, Pa.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- JOHNSTON & CHAPMAN CO., 2925 Carroll Ave., Chicago 12, Ill.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.
- JOSEPH T. RYERSON & SON, INC., P.O. Box 8009-A, Chicago 80, Ill.
- SMITH ENGINEERING WORKS, 532 E. Capitol Dr., Milwaukee 12, Wis.
- STANDARD STAMPING & PERFORATING CO., 3129 W. 49th Place, Chicago, Illinois
- YUBA MFG. CO., 351 California St., San Francisco 4, Calif.

## SCREENING PLANTS, Portable (see Crushing and Screening Plants Portable)

## SCREENS

1. Gravity
  2. Grizzly
  3. Laboratory
  4. Revolving
  5. Scrubber
  6. Vibrating & Shaker
  7. Gyration
  8. Vertical
- AJAX FLEXIBLE COUPLING CO., INC., Westfield, New York
  - ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wisc.
  - AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
  - ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio
  - BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio
  - BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
  - BONDED SCALE AND MACHINE CO., 2176 S. Third St., Columbus 7, Ohio
  - THE BRANFORD COMPANY, 145 Chestnut Street, New Haven, Conn.
  - CARRIER CONVEYOR CORP., 2144 Frankfort Avenue, Louisville 6, Ky.
  - THE COLORADO FUEL AND IRON CORP., Pacific Coast Div., 1080 19th Ave., Oakland 6, Calif.
  - THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 373 Madison Avenue, New York 22, New York
  - CROSS ENGINEERING CO., Carbondale, Pa.
  - THE DEISTER CONCENTRATOR CO., 935 Glasgow Ave., Fort Wayne 1, Ind.
  - DEISTER MACHINE CO., 1933 E. Wayne St., Fort Wayne 4, Ind.
  - DENVER EQUIPMENT CO., 1400 17th St., Denver 17, Colo.
  - DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 4838 S. Halstead, Chicago, Illinois
  - EAGLE CRUSHER CO., INC., 1000 Harding Way East, Gallon, Ohio
  - J. B. EHRSAM & SONS MFG. CO., Enterprise, Kansas
  - GILSON SCREEN CO., 2683 York Rd., Columbus 12, Ohio
  - GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.
  - HENDRICK MFG. CO., 39 Dundaff St., Carbondale, Pa.
  - HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.
  - HUBER-WARCO, Marion, Ohio
  - HUMBOLDT MFG. CO., 2014 N. Whipple St., Chicago 47, Ill.
  - IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
  - JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio
  - KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
  - KOLMAN MFG. CO., West 12th St. Rd., Sioux Falls, S. D.
  - LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
  - LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
  - McLANAHAN & STONE CORP., McLANAHAN Bldg., Hollidaysburg, Pa.
  - MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Illinois
  - NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wisc.
  - OVERSTROM & SONS, 2213 West Mission Rd., Alhambra, Calif.
  - PIONEER ENGINEERING WORKS, INC., 1315 Central Ave. N.E., Minneapolis 13, Minn.
  - PRASCHAK MACHINE CO., Marshfield, Wis.
  - PRODUCTIVE EQUIPMENT CORP., 2926-28 West Lake St., Chicago 12, Ill.
  - ROGERS IRON WORKS CO., Joplin, Mo.
  - ROSS SCREEN & FEEDER CO., 19 Rector St., New York 6, N.Y.
  - SCREEN EQUIPMENT CO., INC., 1754 Walden Ave., Buffalo 25, N.Y.
  - SIMPLICITY ENGINEERING CO., 1939 Ralph St., Durand, Mich.
  - SMITH ENGINEERING WORKS, 532 E. Capitol Dr., Milwaukee 12, Wis.
  - SOUTHWESTERN ENGR. CO., 48th Santa Fe Ave., Los Angeles, Calif.

• A dot before name indicates ROCK PRODUCTS Advertiser

# DIRECTORY

THE STEARNS ROGER MFG. CO.,  
1720 California St., Denver 2,  
Colo.

• STEPHENS-ADAMSON MFG. CO.,  
275 Ridgeway Ave., Aurora, Ill.  
2-4-6

SEPARATOR DIV. SOUTHWEST-  
ERN ENGINEERING CO., 4800 S.  
Santa Fe Ave., Los Angeles 58,  
Calif.

1-6-7  
STRAUB MFG. CO. INC., 8383  
Baldwin, Oakland, Calif.  
2-3-4-5-6

• STURTEVANT MILL COMPANY,  
102 Clayton St., Dorchester, Bos-  
ton 22, Mass.

3-4  
• SYNTRON COMPANY, 450 Lex-  
ington Ave., Homer City, Pa.  
2-3-4

• THE W. S. TYLER CO., 3613  
Superior Ave., Cleveland 14, Ohio  
1-2-3-4-5-6-7

• UNIVERSAL ENGINEERING CORP.,  
625 C Ave. N.W., Cedar Rapids,  
Iowa

2-5-6-7  
• UNIVERSAL ROAD MACHINERY  
CO., 27 Emerick St., Kingston,  
N.Y.

6-5  
• UNIVERSAL VIBRATING SCREEN  
CO., Deane Blvd., & St. Paul Rte.,  
Racine, Wis.

3-6  
• VIBRO-PLUS PRODUCTS, INC., 54-  
11 Queens Blvd., Woodside 77,  
N.Y.

1-2-6  
RICHARD P. WALSH CO., 30  
Church St., New York, N.Y.

1-2-3-4-5-6-7  
THE WEBB CORP., Webb City, Mo.  
4

• WEDGE WIRE CORP., Fairground  
St., Wallington, Ohio  
2-6-7

• WILLIAMS PATENT CRUSHER &  
PULVERIZER CO., INC., 813 Mont-  
gomery St., St. Louis 6, Mo.

2-4  
• YUBA MFG. CO., 351 California  
St., San Francisco 4, Calif.

## SCREW CONVEYORS (see Conveyors, Screw)

## SCRUBBERS, Crushed Stone, Gravel

• ALLIS-CHALMERS MFG. CO., 975  
South 70th Street, Milwaukee 1,  
Wisconsin

• AUSTIN-WESTERN DIV. BALDWIN-  
LIMA-HAMILTON CORP., Lima,  
Ohio

• BALDWIN-LIMA-HAMILTON  
CORP., Crusher Sales Div., South  
Main St., Lima, Ohio

• BODINSON MFG. CO., 2401 Bay-  
shore Blvd., San Francisco 24,  
Calif.

• DIAMOND IRON WORKS, DIV.  
GOODMAN MFG. CO., 4838 S.  
Halsted, Chicago, Illinois

• EAGLE IRON WORKS, 137 Hal-  
comb Ave., Des Moines 4, Iowa

• J. B. EHRSAM & SONS MFG. CO.,  
Enterprise, Kansas

• HARDINGE CO., INC., 240 Arch  
St., York, Pa.

• IOWA MFG. CO., 916-16th St.  
N.E., Cedar Rapids, Iowa

• KENNEDY-VAN SAUN MFG. &  
ENG. CORP., 2 Park Ave., New  
York 16, New York

• LINK-BELT COMPANY, 307 N.  
Michigan Ave., Chicago 1, Ill.

• LIPPMANN ENGINEERING WORKS,  
4603 W. Mitchell St., Milwaukee  
14, Wis.

• McLANAHAN & STONE CORP.,  
McLanahan Bldg., Hannibalsburg,  
Pa.

• McNALLY PITTSBURGH MFG. CORP.,  
W. Third St., Pittsburgh, Kan.

• MECKUM ENGINEERING, INC.,  
Dayton Rd., Ottawa, Ill.

• PIONEER ENGINEERING WORKS,  
INC., 1515 Central Ave. N.E.,  
Minneapolis 13, Minn.

• ROGERS IRON WORKS CO., Jop-  
lin, Mo.

• F. L. SMITH & CO., 20 West  
43rd St., New York, N.Y.

• SMITH ENGINEERING WORKS, 532  
East Capitol Dr., Milwaukee 12,  
Wis.

• TRAYLOR ENGINEERING & MFG.  
CO., Allentown, Pa.

• UNIVERSAL ENGINEERING CORP.,  
625 C Ave. N.W., Cedar Rapids,  
Iowa

• RICHARD P. WALSH CO., 30  
Church St., New York, N.Y.

• WESTERN MACHINERY CO., 760  
Polsom St., San Francisco 7, Calif.

## SEAL RINGS, Kiln

• VULCAN IRON WORKS, 730 So.  
Main St., Wilkes-Barre, Pa.

## SEPARATORS, Air (see Air Separators)

## SEPARATORS, Electrostat- ic (see Classifiers)

## SEPARATORS, Magnetic (see Magnetic Separa- tors)

## SHEAVES

1. Wire Rope  
2. V. Belt

• ALLIS-CHALMERS MFG. CO., 975  
South 70th Street, Milwaukee 1,  
Wisconsin

• AMERICAN MANGANESE STEEL  
DIV., AMERICAN BRAKE SHOE  
CO., 389 E. 14th St., Chicago  
Heights, Ill.

• AMERICAN HOIST & DERRICK  
CO., 63 S. Robert St., St. Paul 1,  
Minn.

• THE AMERICAN PULLEY CO., 4200  
Wissachickon Ave., Philadelphia  
29, Pa.

2  
• BOSTON WOVEN ROPE & RUB-  
BER COMPANY, P.O. Box 1071,  
Boston 3, Massachusetts

2  
• THE COLORADO FUEL AND IRON  
CORP., Wickwire Spencer Steel  
Division, 373 Madison Avenue,  
New York 22, New York

1  
• CONTINENTAL GIN CO., 4500 5th  
Ave. South, Birmingham, Alabama

2  
• DODGE MFG. CORP., 1932 Wil-  
liam St., Mishawaka, Ind.

2  
• DURKEE-ATWOOD CO., 215 N.E.  
7th St., Minneapolis 13, Minn.

2  
• GATES RUBBER CO., 999 South  
Broadway, Denver 17, Colo.

• IOWA MFG. CO., 916-16th St.  
N.E., Cedar Rapids, Iowa

1-2  
• W. A. JONES FOUNDRY & MA-  
CHINE CO., 4401 Roosevelt Road,  
Chicago 24, Ill.

2  
• JOY MFG. CO., Henry W. Oliver  
Bldg., Pittsburgh 22, Pa.

1  
• MADESCO TACKLE BLOCK CO.,  
P.O. Box 148, Easton, Pa.

• McLANAHAN & STONE CORP.,  
McLanahan Bldg., Hannibalsburg,  
Pa.

1-2  
• SAUERMAN BROS. INC., 620 S.  
28th Ave., Bellwood, Illinois

1  
• STROH PROCESS STEEL CO., 1428  
High St. N.E., Pittsburgh 12, Pa.

1  
• TAYLOR-WHARTON IRON & STEEL  
CO., High Bridge, N.J.

1  
• VULCAN IRON WORKS, 730 So.  
Main St., Wilkes-Barre, Pa.

1  
• WEBSTER MFG. CO., 1100 W.  
Davis St., Tiffin, Ohio

• TAYLOR-WHARTON IRON & STEEL  
CO., High Bridge, N.J.

1  
• VULCAN IRON WORKS, 730 So.  
Main St., Wilkes-Barre, Pa.

1  
• WEBSTER MFG. CO., 1100 W.  
Davis St., Tiffin, Ohio

## SHIPPING SACKS, Paper, Heavy Duty

• KRAFT BAG CORP., 630 5th Ave.,  
New York 20, N.Y.

• GILMAN PAPER CO., 630 5th  
Ave., New York 20, N.Y.

## SHOVELS, Crawler Mounted

1. Diesel  
2. Electric  
3. Gasoline  
4. Electric Generator

• AMERICAN HOIST & DERRICK  
CO., 63 S. Robert St., St. Paul 1,  
Minn.

1-2-3-4  
• BALDWIN-LIMA-HAMILTON  
CORP., Crusher Sales Div., South  
Main St., Lima, Ohio

1-2-3-4  
• BAY CITY SHOVELS, INC., Bay  
City, Michigan

1-2-3  
• BUCYRUS-ERIE CO., South Mil-  
waukee, Wisc.

1-2-3-4  
• CATERPILLAR TRACTOR CO., Pe-  
oria 8, Illinois

1  
• CLARK EQUIPMENT CO., Construc-  
tion Machinery Div., P.O. Box 599,  
Benton Harbor, Michigan

1-3  
• GAR WOOD INDUSTRIES, INC.,  
Findlay, Ohio and Wayne, Michi-  
gan

3  
• HANSON CLUTCH & MACHINE  
CO., 2000 Miami St., Tiffin, Ohio

1  
• HARNISCHFEGGER CORP., 4400 W.  
National Ave., Milwaukee, Wis-  
consin

1-2-3-4  
• THE FRANK G. HOUGH CO., Div.  
of International Harvester Co.,  
939 Sunnyside Ave., Libertyville,  
Ill.

1-3  
• HYSTER COMPANY, 2918 N.E.  
Clackamas St., Portland 8, Ore.

1  
• INSLEY MFG. CO., 801 N. Olney  
St., Indianapolis 6, Ind.

1-2-3-4  
• KOEHRING COMPANY, 3026 W.  
Concordia Ave., Milwaukee 16,  
Wis.

1-2-3-4  
• LINK-BELT SPEEDER CORP., 307  
N. Michigan Ave., Chicago, Illi-  
nois

1-2-3-4  
• LITTLE GIANT CRANE & SHOVEL,  
INC., East 16th & Howard Drive,  
Des Moines 13, Iowa

1-2-3  
• MANITOWOC ENGINEERING  
CORP., 16th & River Sts., Mani-  
towoc, Wis.

1-2-3  
• MARION POWER SHOVEL CO.,  
617 W. Center St., Marion, Ohio

1-2-3-4  
• NORTHWEST ENGINEERING CO.,  
135 S. LaSalle St., Chicago 3, Ill.

1-2-3-4  
• ORTON CRANE & SHOVEL CO.,  
608 S. Dearborn, Chicago, Illinois

1-2-3  
• OSGOOD-GENERAL, P.O. Box 515,  
(Osgood & Cheney Ave.), Marion,  
Ohio

1-2-3-4  
• SCHIELD BANTAM CO., Park St.,  
Waverly, Iowa

1-2-3-4  
• THE THEW SHOVEL CO., Lorain,  
Ohio

1-2-3  
• UNIT CRANE & SHOVEL CORP.,  
6411 W. Burnham St., Milwaukee  
14, Wis.

1-2-3  
• RICHARD P. WALSH CO., 30  
Church St., New York, N.Y.

1-2-3  
• THE JEFFREY MFG. CO., 935 N.  
Fourth St., Columbus 16, Ohio

• UNIT CRANE & SHOVEL CORP.,  
6411 W. Burnham St., Milwaukee  
14, Wis.

1-2-3-4  
RICHARD P. WALSH CO., 30  
Church St., New York, N.Y.

1-2-3

## SHOVELS, Tractor

• ALLIS-CHALMERS MFG. CO., 975  
South 70th Street, Milwaukee 1,  
Wisconsin

• ALLIS-CHALMERS MFG. CO., Trac-  
tor Group, Milwaukee 1, Wisc.

• THE BAKER-AULING CO., 1250  
W. 80th St., Cleveland, Ohio

• J. I. CASE COMPANY, 700 State  
Street, Racine, Wisc.

• DROTT MFG. CORP., 3841 W. Wis-  
consin Ave., Milwaukee 8, Wisc.

• GAR WOOD INDUSTRIES, INC.,  
Findlay, Ohio and Wayne, Michi-  
gan

• HARNISCHFEGGER CORP., 4400 W.  
National Ave., Milwaukee, Wis-  
consin

• THE FRANK G. HOUGH CO., Div.  
of International Harvester Co.,  
939 Sunnyside Ave., Libertyville,  
Ill.

• HYSTER CO., 2918 N.E. Clackamas  
St., Portland 8, Ore.

• INTERNATIONAL HARVESTER CO.,  
180 N. Michigan Ave., Chicago 1,  
Ill.

• THE JAEGER MACHINE CO., 550  
W. Spring St., Columbus 16, Ohio

• LESSMAN MFG. CO., (Div. of  
United Steel Bldg. Co.), Lewis  
Tower Bldg., Philadelphia, Pa.

• NORTHWEST ENGINEERING CO.,  
135 S. LaSalle St., Chicago 3, Ill.

• RICHARD P. WALSH CO., 30  
Church St., New York, N.Y.

## SHOVELS, Truck-Mounted

• AMERICAN HOIST AND DERRICK  
COMPANY, 63 South Robert St.,  
St. Paul 1, Minnesota

• BALDWIN-LIMA-HAMILTON  
CORP., Construction Equipment  
Div., South Main St., Lima, Ohio

• BAY CITY SHOVELS, INC., Bay  
City, Michigan

• BUCYRUS-ERIE CO., South Mil-  
waukee, Wisc.

• CLARK EQUIPMENT CO., Construc-  
tion Machinery Div., P.O. Box 599,  
Benton Harbor, Michigan

• GAR WOOD INDUSTRIES, INC.,  
Findlay, Ohio and Wayne, Michi-  
gan

• INSLEY MFG. CO., 801 N. Olney  
St., Indianapolis 6, Ind.

• KOEHRING COMPANY, 3026 W.  
Concordia Ave., Milwaukee 16,  
Wis.

• LINK-BELT SPEEDER CORP., 307 N.  
Michigan Ave., Chicago, Illinois

• LITTLE GIANT CRANE & SHOVEL,  
INC., East 16th & Howard Drive,  
Des Moines 13, Iowa

• NORTHWEST ENGINEERING CO.,  
135 S. La Salle St., Chicago 3,  
Ill.

• OSGOOD-GENERAL, P.O. Box 515,  
(Osgood & Cheney Ave.), Marion,  
Ohio

• "QUICK-WAY" TRUCK SHOVEL  
CO., 4150 Josephine St., Denver,  
Colo.

• SCHIELD BANTAM CO., Park St.,  
Waverly, Iowa

• THE THEW SHOVEL CO., Lorain,  
Ohio

• UNIT CRANE & SHOVEL CORP.,  
6411 W. Burnham St., Milwaukee  
14, Wis.

• RICHARD P. WALSH CO., 30  
Church St., New York, N.Y.

• THE JEFFREY MFG. CO., 935 N.  
Fourth St., Columbus 16, Ohio

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# DIRECTORY

## SIEVES, Testing

- HUMBOLDT MFG. CO., 2014 N. Whipple St., Chicago 47, Ill.
- THE W. S. TYLER CO., 3615 Superior Ave., Cleveland 14, Ohio

## SILOS, Storage

- BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- THE DODSON MFG. CO., INC., 1463 Barwise Ave., Wichita 2, Kan.
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- C. S. JOHNSON CO., P.O. Box 71, Champaign, Ill.
- MACDONALD ENGR. CO., 188 W. Randolph St., Chicago 1, Ill.
- THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio
- NEFF & FRY CO., 150 Thomas St., Camden, Ohio
- THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

## SINTERING MACHINERY

- BESSER MANUFACTURING COMPANY, Alpena, Michigan
- DWIGHT-LLOYD DIV., McDOWELL CO., INC., 16300 Waterloo Road, Cleveland 10, Ohio
- MACE CO., 2763 Blake St., Denver, Colorado
- NEFF & FRY COMPANY, Camden, Ohio
- NICHOLS ENGINEERING & RESEARCH CORP., 70 Pine St., New York 3, N.Y.
- F. L. SMITH & CO., 20 West 43rd St., New York 36, N.Y.
- STEARNS MFG. CO., INC., 600 E. Beecher, Adrian, Mich.

## SKIP HOISTS

- ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio
- BEAUMONT BIRCH CO., 1505 Race St., Philadelphia 2, Pa.
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.
- GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- W. A. JONES FOUNDRY & MACHINE CO., 4401 Roosevelt Road, Chicago 24, Ill.
- KENNEDY-VAN SAUN MFG. & ENGR. CORP., 2 Park Ave., New York 16, New York
- KENT MACHINE CO., Cuyahoga Falls, Ohio
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wisc.
- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.
- ROGERS IRON WORKS CO., Joplin, Mo.
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.
- VULCAN IRON WORKS, 730 S. Main St., Wilkes-Barre, Pa.
- WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio
- WITTMANN MACHINERY CO., Farmingdale, N. J.

## SKIP LOADERS

- ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio
- BEAUMONT BIRCH CO., 1505 Race St., Philadelphia 2, Pa.
- BESSER MFG. CO., Alpena, Mich.
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- DES PLAINES CONCRETE PROD. MACHINERY, 930 North Ave., Des Plaines, Ill.
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- KENNEDY-VAN SAUN MFG. & ENGR. CORP., 2 Park Ave., New York 16, New York
- MULTIPLEX MACHINERY CO., Div. of MULTIPACK, INC., Fremont St., Elmore, Ohio
- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.
- STEARNS MFG. CO., INC., 600 E. Beecher, Adrian, Mich.

## SLAKERS (see Hydrators, Lime)

## SLINGS, Wire Rope (see Wire Rope Slings)

## SLUGS, Grinding (see Grinding Media)

## SLURRY AGITATORS

- DENVER EQUIPMENT CO., 1400 17th Street, Denver 17, Colo.
- DORR-OLIVER, INC., Barry Place, Stamford, Conn.
- THE GALIGHIER CO., 545 W. 8th South St., Salt Lake City 4, Utah
- HARDINGE CO., INC., 240 Arch St., York, Pa.
- KENNEDY-VAN SAUN MFG. & ENGR. CORP., 2 Park Ave., New York 16, New York
- MANITOWOC SHIPBUILDING, INC., 16th & River Sts., Manitowoc, Wisc.
- F. L. SMITH & CO., 20 West 43rd St., New York 36, N.Y.
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.

## SLURRY FILTERS

- BIRD MACHINE COMPANY, South Walpole, Massachusetts
- DORR-OLIVER, INC., Barry Place, Stamford, Connecticut
- DWIGHT-LLOYD DIV., McDOWELL CO., INC., 16300 Waterloo Road, Cleveland, Ohio
- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.
- KENNEDY-VAN SAUN MFG. & ENGR. CORP., 2 Park Ave., New York 16, New York

## SLURRY MIXERS

- DORR-OLIVER, INC., Barry Place, Stamford, Conn.
- EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa
- HARDINGE CO., INC., 240 Arch St., York, Pa.
- KENNEDY-VAN SAUN MFG. & ENGR. CORP., 2 Park Ave., New York 16, New York
- THE KOEHRING CO., 3026 W. Concordia Ave., Milwaukee 16, Wisc.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.

## SLURRY PUMPS (see Pumps, Slurry)

## SLURRY SEPARATORS

- DORR-OLIVER, INC., Barry Place, Stamford, Conn.

- HARDINGE CO., INC., 240 Arch St., York, Pa.
- JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio
- KENNEDY-VAN SAUN MFG. & ENGR. CORP., 2 Park Ave., New York 16, New York
- F. L. SMITH & CO., 20 West 43rd St., New York 36, N.Y.
- SEPARATOR DIV., SOUTHWESTERN ENGINEERING CO., 4800 S. Santa Fe Ave., Los Angeles 38, Calif.

## SLURRY THICKENERS

- DENVER EQUIPMENT CO., 1400 17th Street, Denver 17, Colo.
- DORR-OLIVER, INC., Barry Place, Stamford, Conn.
- DWIGHT-LLOYD DIV., McDOWELL CO., INC., 16300 Waterloo Road, Cleveland, Ohio
- EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa
- HARDINGE CO., INC., 240 Arch St., York, Pa.
- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.
- JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio
- KENNEDY-VAN SAUN MFG. & ENGR. CORP., 2 Park Ave., New York 16, New York
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wisc.
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.

## SOCKETS, Wire Rope (see Wire Rope Fittings)

## SPEED REDUCERS (see Drives)

## SPOUTS (see Chutes)

## SPRAYS, Wash Water

- THE DEISTER CONCENTRATOR CO., 935 Glasgow Ave., Port Wayne 1, Ind.

## SPROCKETS, Chain

- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wisc.
- DIAMOND CHAIN CO., INC., 402 Kentucky Ave., Indianapolis 7, Ind.
- DODGE MFG. CORP., 1952 William St., Mishawaka, Ind.
- ILLINOIS GEAR & MACHINE CO., 2108 N. Natchez, Chicago, Illinois
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- McLANAHAN & STONE CORP., McLanahan Bldg., Hollidaysburg, Pa.
- TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N. J.
- TRUAX MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash.
- WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio

## STAIR TREADS & STEPS, Industrial

- BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071, Boston 3, Massachusetts
- JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.
- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

## STARTERS, Motor

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- CLARK CONTROLLER CO., 1146 East 152nd St., Cleveland, Ohio
- GARDNER-DENVER CO., Quincy, Ill.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

## STEAM-CURING EQUIPMENT, Concrete (see Kilns)

## STEEL

- Abrasion Resisting
  - Bar
  - Concrete Reinforcing
  - Heat-Resisting
  - Manganese
  - Plates & Shapes
  - Shaffing
  - Special Alloy
- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.
  - AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 399 E. 14th St., Chicago Heights, Ill.
  - BETHLEHEM STEEL CO., Third St., Bethlehem, Pa.
  - CARTER-WATERS CORP., 2440 Pennway, Kansas City 8, Mo.
  - CEDAR RAPIDS BLOCK CO. (DUR-O-WAL), 656 12th Ave., S.W., Cedar Rapids, Iowa
  - THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado
  - THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 373 Madison Avenue, New York 22, New York
  - ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 25th Ave., Portland 10, Ore.
  - FABRICATORS STEEL CORP., 3404 New River Road, P.O. Box 87, Bladensburg, Md.
  - THE FAHRALLOY CO., 150th & Lexington Aves., Harvey, Ill.
  - THE FROG, SWITCH & MFG. CO., Carlisle, Pa.
  - JONES & LAUGHLIN STEEL CORP., 3 Gateway Center, Pittsburgh 30, Pa.
  - JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.
  - STULZ-SICKLES CO., 134 Lafayette St., Newark 5, N. J.
  - TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N. J.
  - THE TIMKEN ROLLER BEARING CO., Canton 6, Ohio
  - UNITED STATES STEEL CORP., 525 William Penn Plaza, Pittsburgh 30, Pa.
  - UNITED STATES STEEL CORP., 208 S. LaSalle St., Chicago 90, Ill.
  - COLUMBIA-GENEVA STEEL DIV., UNITED STATES STEEL CORP., Equitable Life Bldg., San Francisco 6, Calif.
  - ACME STEEL CO., 2840 Archer Ave., Chicago, Illinois
  - A. J. GERHARD & CO., 1962 Hawthorne Pl., Melrose Park, Illinois

## STEEL STRAPPING

\* A dot before name indicates ROCK PRODUCTS Advertiser



## D I R E C T O R Y

SIGNODE STEEL STRAPPING, 2640 N. Western Ave., Chicago, Illinois

- U. S. STEEL, GERRARD STEEL STRAPPING DIV., 2915 West 47th St., Chicago 32, Illinois

### STOKERS, Coal, for Lime Kilns, etc.

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

### STORAGE SYSTEMS, Radial

- THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio
- NEFF & FRY COMPANY, 150 Thomas St., Camden, Ohio
- THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

### STUCCO COLORS (see Cement and Masonry Colors)

### SUPERHEATERS (see Boilers)

### SWITCHBOARDS AND PANELS

- ALLIS-CHALMERS MFG. CO., 975 S. 70th St., Milwaukee 1, Wisc.
- ELECTRIC MACHINERY MFG. CO., 800 Central Avenue, Minneapolis 13, Minn.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- THE KIRK & BLUM MFG. CO., 3120 Forrer St., Cincinnati 9, Ohio
- THE READY-POWER CO., 11231 Freud Ave., Detroit 14, Mich.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### SWITCHES, Control, Electric

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- ENSIGN ELECTRIC & MFG. CO., 914 Adams Ave., Huntington, W. Va.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### SWITCHES, Magnetic

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

## T

### TABLES, Washing, Concentrating (see Concentrating Tables)

### TACHOMETERS, Counters, etc.

- THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- INSTRUMENT DIV., STEWART-WARNER CORP., 1826 Diversy Parkway, Chicago, Illinois
- STREETER-AMET CO., 4101 N. Ravenswood Ave., Chicago 13, Ill.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### TANKS, Gasoline

- GENERAL AMERICAN TRANSPORTATION CORP., 135 S. LaSalle St., Chicago 90, Ill.
- R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.

### TANKS, Sand Settling (see Sand Recovery Machinery)

### TANKS, Storage, Concrete

- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio
- NEFF & FRY CO., 150 Thomas St., Camden, Ohio
- THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### TANKS, Storage, Steel

- BETHLEHEM STEEL CO., Third St., Bethlehem, Pa.
- BLAW-KNOX CO., 2035 Farmers Bank Bldg., Pittsburgh, Pa.
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- BURKHART ENGINEERING ASSOCIATES, 30 Huntington Avenue, Boston, Mass.
- DENVER EQUIPMENT CO., 1400 17th St., Denver 17, Colo.
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- GENERAL AMERICAN TRANSPORTATION CORP., 135 S. LaSalle St., Chicago 90, Ill.
- HOWRY-BERG STEEL & IRON WORKS, 1366 W. Oxford, Denver, Colorado
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- THE KIRK & BLUM MFG. CO., 3120 Forrer St., Cincinnati 9, Ohio
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- LITTLEFORD BROS. INC., 453 E. Pearl St., Cincinnati 2, Ohio
- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.
- RICHMOND ENGINEERING CO., 700 Hospital St., Richmond, Va.
- R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### TESTING LABORATORIES (see Laboratories)

### TESTING EQUIPMENT (see Laboratory Apparatus)

### THAWING PITS (for Frozen R. R. Hopper Cars)

- JOHNSTON MFG. CO., 2825 E. Hennepin Ave., Minneapolis 13, Minn.

### THERMOCOUPLES, Pyrometers (see Pyrometers)

### THICKENERS (see Slurry Thickeners)

### THIRD AXLES (see Motor Truck Drives and Differentials)

### TIRES, Coolers, Dryers, Kiln

- F. L. SMDTH & CO., 20 W. 43rd St., New York 36, N.Y.
- STROM PROCESS STEEL CO., 1428 High St. N.E., Pittsburgh 12, Pa.
- TAYLOR ENGINEERING & MFG. CO., Allentown, Pa.

### TIRES AND TUBES, Rubber, Heavy Duty Industrial

- FIRESTONE TIRE & RUBBER CO., Akron, Ohio
- GATES RUBBER CO., 999 S. Broadway, Denver, Colorado
- GENERAL TIRE & RUBBER CO., Englewood Ave., Akron, Ohio
- B. F. GOODRICH CO., 500 South Main St., Akron 11, Ohio
- THE GOODYEAR TIRE & RUBBER CO., INC., 1144 E. Market St., Akron 16, Ohio
- GULF OIL CORP., GULF REFINING CO., Gulf Bldg., Pittsburgh 30, Pa.
- STAR RUBBER CO., 345 Park Ave. East, Mansfield, Ohio
- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

### TORCHES, Cutting and Welding (see Welding and Cutting Equipment, Oxyacetylene)

### TORQUE CONVERTERS

- ALLISON DIV. OF GENERAL MOTORS CORP., 4700 W. 10th St., Indianapolis 6, Ind.
- TORCON CORP., 493 E. 5th St., Ashtabula, Ohio
- TRACTOMOTIVE CORP., Deerfield, Ill.
- TWIN DISC CLUTCH CO., Racine, Wisconsin

### TOWERS, Structural Steel

- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio

### TRACK & TRACK EQUIPMENT

- AMERICAN BRAKE SHOE CO., 230 Park Avenue, New York 17, New York
- ATHEY PRODUCTS CO., 5631 W. 65th St., Chicago 38, Ill.
- BETHLEHEM STEEL CO., Third St., Bethlehem, Pa.
- THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado
- THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 375 Madison Avenue, New York 22, New York
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.
- KENSINGTON STEEL CO., 305 Kensington Ave., Chicago 23, Ill.
- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wisc.
- UNITED STATES STEEL CORP., 525 William Penn Place, Pittsburgh 30, Pa.

### TRACTORS, Industrial Crawler

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin

- ALLIS-CHALMERS MFG. CO., Tractor Group, Milwaukee 1, Wisc.
- CATERPILLAR TRACTOR CO., Peoria 8, Ill.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- THE OLIVER CORP., 400 W. Madison St., Chicago 6, Ill.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### TRACTORS, Industrial Wheel

- J. I. CASE COMPANY, 700 State Street, Racine, Wisc.

### TRAILER BODIES (see Bodies)

### TRAILER BODIES, Bulk Cement (see Bodies)

### TRAILERS & SEMI-TRAILERS, Motor Truck Eqp.

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- EUCLID DIV., GENERAL MOTORS CORP., 1361 Chardon Road, Cleveland 17, Ohio
- FRUEHAUF-HOBBS DIV., FRUEHAUF TRAILER CO., 609-33 N. Main, Fort Worth, Texas
- THE FRUEHAUF TRAILER CO., 10940 Harper Ave., Detroit 32, Mich.
- THE GALION ALLSTEEL BODY CO., Galion, Ohio

### TRAILERS, Cable Dump

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- FRUEHAUF-HOBBS DIV., FRUEHAUF TRAILER CO., 609-33 N. Main, Fort Worth, Texas
- THE MARION METAL PROD. CO., Cheney Ave., Marion, Ohio

### TRAMWAYS, Aerial (see Aerial Tramways)

### TRANSFER PLANTS, Ready-Mixed Concrete

- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- CONCRETE TRANSPORT MIXER CO., 4985 Fyler Ave., St. Louis 9, Mo.
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- WORTHINGTON CORP., 426 Washington Ave., Harrison, N. J.

### TRANSFORMERS, Electric

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wisc.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### TRANSIT CONCRETE MIXING PLANTS (see Central Mixing Plants)

### TRANSMISSION MACHINERY (see Gears)

### TRIPPERS, Belt (see Conveyor Belt Trippers)

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## DIRECTORY

### TROLLEYS, I-Beam

- THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado
- JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.
- WHITING CORP., Harvey, Ill.
- THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Haldeman Ave., Philadelphia 13, Pa.

### TRUCK BODIES (see Bodies)

### TRUCKS, Dump (see Motor Trucks)

### TRUCKS, Hand

- THE AMERICAN FULLEY CO., 4200 Wissahickon Ave., Philadelphia 29, Pa.
- CLARK EQUIPMENT COMPANY, Industrial Truck Division, Battle Creek 60, Michigan
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- THE HOWE SCALE CO., Rutland, Vt.
- THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Haldeman Ave., Philadelphia 13, Pa.

### TRUCKS, Lift (see Lift Trucks)

### TRUCKS, Straddle

- CLARK EQUIPMENT CO., Construction Machinery Div., P.O. Box 599, Benton Harbor, Michigan

### TRUCKS AND TRACTORS, Wheeled Industrial

1. Electric
  2. Gas
- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
  - ALLIS-CHALMERS MFG. CO., Tractor Group, Milwaukee 1, Wisc.
  - BAKER-RAULANG CO., 1250 West 80th St., Cleveland, Ohio
  - 1—2
  - THE BUDA DIV., ALLIS-CHALMERS MFG. CO., 154th & Commercial, Harvey, Illinois
  - 2
  - CLARK EQUIPMENT COMPANY, Industrial Truck Division, Battle Creek 60, Michigan
  - 3
  - EASTON CAR & CONSTRUCTION CO., Easton, Pa.
  - 1
  - GERLINGER CARRIER CO., Dallas, Ore.
  - 2
  - THE FRANK G. HOUGH CO., Div. of International Harvester Co., 939 Sunnyside Ave., Libertyville, Ill.
  - 2
  - INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago, Illinois
  - 2
  - TRUCK-MAN DIV., THE KNICKERBOCKER CO., 603 Liberty St., Jackson, Mich.
  - 2
  - LESSMANN MFG. CO. (Div. of United Steel Bldg. Co.), Lewis Tower Bldg., Philadelphia, Pa.
  - 2
  - MOBILIFT CORP., 835 S.E. Main St., Portland 14, Ore.
  - 2
  - THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Haldeman Ave., Philadelphia 13, Pa.
  - 1—2

### TRUCKS, Motor (see Motor Trucks)

### TURBINES, Steam

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wisc.
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- THE EUCLID DIV., GENERAL MOTORS CORP., 1361 Chardon Road, Cleveland 17, Ohio
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### TURBINES, Water

- ALLIS-CHALMERS MFG. CO., 974 So. 70th St., Milwaukee 1, Wisc.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### TURNABLES, Track

- CHASE FOUNDRY & MANUFACTURING CO., 2800 Parsons Ave., Columbus, Ohio
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.
- HARDINGE CO., INC., 240 Arch St., York, Pa.
- MOORE DRY KILN CO., 1220 W. State St., Jacksonville 1, Fla.
- STEARNS MFG. CO., INC., 600 E. Beecher, Adrian, Mich.

## U

### UNLOADERS, Boat

- DRAYCORP., Drave Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wisc.
- WELLMAN ENGINEERING CO., 7000 Central Ave., Cleveland 4, Ohio

### UNLOADERS, Box Car

- BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Illinois
- BONDED SCALE AND MACHINE CO., 2176 S. Third St., Columbus 7, Ohio
- BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wisc.
- HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.
- THE FRANK G. HOUGH CO., Div. of International Harvester Co., 939 Sunnyside Ave., Libertyville, Ill.
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wisc.
- WEBSTER MFG. CO., 1100 W. Davis St., Tiffin, Ohio

### UNLOADERS, Block

- BUILDERS EQUIPMENT COMPANY, 4012 N. Central Avenue, Phoenix, Arizona

### UNLOADERS, Hopper Car

- BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.
- BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.

### BONDED SCALE AND MACHINE CO., 2176 S. Third St., Columbus 7, Ohio

- BUTLER BIN CO., 945 Blackstone Avenue, Waukesha, Wisc.
- CONCRETE TRANSPORT MIXER CO., 4985 Fyler Ave., St. Louis 9, Mo.
- FULLER CO., Catsaqua, Pa.
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wisc.
- MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.
- THE OLIVER CORP., A. B. FARQUHAR DIV., York, Pa.

### UNLOADERS, Pneumatic

- ADAM BLACK & SON, 30 Tonnelle Ave., Jersey City, N. J.
- A. CRESCI & SONS, INC., Blvd. & Grape Sts., Vineland, N. J.
- FULLER CO., Catsaqua, Pa.
- GARDNER-DENVER CO., Quincy, Ill.
- HAVERSTICK BROS., 2111 Stone Mill Road, Lancaster, Pennsylvania
- IMPERIAL CONSTRUCTION EQUIPMENT CO., 230 W. North Ave., Northlake, Illinois
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- ARTHUR REHBERGER & SON, INC., 320 Ferry St., Newark 5, N. J.
- RUSSELL MFG. CO., 1328 Maple Ave., Haddon Heights, N. J.
- SIDE-O-MATIC UNLOADER CORP., P.O. Box 1561, York Pennsylvania
- SPROUT, WALDRON & CO., INC., Muncy, Pa.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

## V

### VALVES, Air

- BLOWER APPLICATION CO., 3161 North 30th St., Milwaukee, Wisc.
- DIXON VALVE & COUPLING CO., Hancock St. & Columbia Ave., Philadelphia 22, Pa.
- HOSE ACCESSORIES CO., Lehigh Ave. at 17th St., Philadelphia 22, Pa.

### VALVES, Automatic

- EAGLE IRON WORKS, 137 Halcomb Ave., Des Moines 4, Iowa
- THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.
- MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Illinois

### VALVES, Bin

- BEAUMONT BIRCH COMPANY, 1505 Race Street, Philadelphia 2, Penn.
- BUELL ENGINEERING CO., 70 Pine Street, New York 5, N.Y.
- CONCRETE TRANSPORT MIXER CO., 4985 Fyler Ave., St. Louis 9, Mo.
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marian, Ohio
- FULLER CO., Catsaqua, Pa.
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- LINK-BELT CO., 307 N. Michigan Ave., Chicago 1, Ill.
- MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.

### VALVES, Slurry

- FULLER CO., Catsaqua, Pa.

- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.
- DeZURIK SHOWER CO., Sartell, Minnesota

### VALVES, Water

- R-PAC VALVE DIV., American Chain & Cable Co., Inc., Bridgeport 2, Connecticut
- DIXON VALVE & COUPLING CO., Hancock St. & Columbia Ave., Philadelphia 22, Pa.

### VENTILATORS, Powered, Roof

- THE KIRK & BLUM MFG. CO., 3210 Farrer St., Cincinnati 9, Ohio

### VIBRATING SCREENS (see Screens, Vibrating)

### VIBRATING TABLES

- KIRK & BLUM MFG. CO., 3210 Farrer St., Cincinnati 9, Ohio

### VIBRATORS for Chutes, Bins, etc.

- THE BIN-DICATOR COMPANY, 13946 Kercheval Avenue, Detroit 15, Michigan
- THE BRANFORD COMPANY, 145 Chestnut Street, New Haven, Conn.
- THE CLEVELAND VIBRATOR CO., 2828 Clinton Ave., Cleveland 13, Ohio
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- MARTIN ENGINEERING CO., 704 Rock Place, Kewanee, Ill.
- SPO, INC., 6556 Grand Division Ave., Cleveland 25, Ohio
- SYNTROM COMPANY, 450 Lexington Ave., Homer City, Pa.
- THE W. S. TYLER CO., 3615 Superior Ave., Cleveland 14, Ohio
- VIBER CO., 726 South Flower St., Burbank, Calif.
- VIBRO-PLUS PRODUCTS, INC., 54-11 Queens Blvd., Woodside 77, N.Y.

### VIBRATORS, Concrete Block

- ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Avenue, Columbus 12, Ohio
- BERGEN MACHINE & TOOL CO., INC., 189 Franklin Avenue, Nutley 10, New Jersey
- THE BRANFORD COMPANY, 145 Chestnut Street, New Haven, Conn.
- THE CLEVELAND VIBRATOR CO., 2828 Clinton Avenue, Cleveland 13, Ohio
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- CONCRETE TRANSPORT MIXER CO., 4987 Fyler Ave., St. Louis 9, Mo.
- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.
- KIRK & BLUM MFG. CO., 3210 Farrer St., Cincinnati 9, Ohio
- MULTIPLEX MACHINERY CO., Div. of Multipack, Inc., Fremont St., Elmore, Ohio
- OSWALT ENGINEERING SERVICE, 1335 Circle Ave., Forest Park, Ill.
- SYNTROM COMPANY, 450 Lexington Ave., Homer City, Pa.

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# DIRECTORY

VIBRO-PLUS PRODUCTS, INC., 54-11 Queens Blvd., Woodside 77, N.Y.

## VIBRATORS, Portable, Concrete

THE BRANFORD COMPANY, 145 Chestnut Street, New Haven, Conn.

- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.
- THE CLEVELAND VIBRATOR CO., 2828 Clinton Ave., Cleveland 13, Ohio
- SYNTON COMPANY, 450 Lexington Ave., Homer City, Pa.
- THOR POWER TOOL CO., 175 N. State St., Aurora, Ill.
- VIBER CO., 726 S. Flower St., Burbank, California
- VIBRO-PLUS PRODUCTS, INC., 54-11 Queens Blvd., Woodside 77, N.Y.

## VOLTMETERS

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## W

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- ALLIS-CHALMERS MFG. CO., Tractor Group, Milwaukee 1, Wisc.
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- CATERPILLAR TRACTOR CO., Peoria 8, Ill.
- EUCLID DIV., GENERAL MOTORS CORP., 1361 Clordon Road, Cleveland 17, Ohio
- WOOLDRIDGE MFG. CO., Hendy Ave., Sunnyvale, Calif.

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- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
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## HOIST MOTORS:

300 H.P., 435 RPM. 600 H.P., 710 RPM.  
400 H.P., 560 RPM. 1200 H.P., 444 RPM.  
2200 volt, A.C. with controls.

We Buy and Sell Equipment Throughout North and Central America

A. J. O'NEILL

Lensdowne, Pa.

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UNIVERSAL 24" x 36" RB, Primary Portable Crushing Plant w/ apron feeder, under-conveyor, Cat. Diesel. Tandem Pneumatic Air brakes. Excellent. \$15,000.00. Consider rental-purchase monthly or yardage basis. Also secondary portable Universal: —30" x 18" R.B. Double Roll, Hammermill.

ROGERS, 2 Unit Portable Crushing Plant, 2436 RB. Jaw Primary, 40 x 22 R.B. Double Rolls. Complete with diesel power. Cost \$70,000.00 Like new—bought one year ago and only crushed 40,000 tons. Price \$50,000.00. Consider rental purchase.

SIMPLICITY Vibr. Screen, 4' x 10'—3 deck. A1. \$1500.00. Other sizes, single and double.

GRUENDLER 3x8. Hammermill. Excellent. \$600.00.

GILSON 14" Hammermill. Like new cond. \$500.00.

LIPPMANN 24x36 RB. Jaw Crusher. \$5000.00.

TELLSMITH 9"x36" RB. Jaw Crusher. \$1850.00.

PIONEER 10"x30" RB. Jaw Crusher. \$1350.00.

Stationary Crushing plant complete with 20x36 RB. Rogers Jaw Feeder, 70' x 24" lattice type conveyor, Rogers 3030 Hammermill, 4'x10' 3-deck Vibr. Screen. New 1948. Only crushed 200,000 tons. Sell complete or each item separately.

IOWA Portable Self Propelled 9x16 Jaw Crusher w/IMC 1020 tractor & belt bucket elevator. Good \$950.00.

ROGERS 10" x 20" Jaw Crusher w/IMC P20 Motor & 25' bucket elevator on steel frame. \$950.00.

## WENZEL MACHINERY RENTAL & SALES CO.

565 S. Tenth St. Kansas City, Kans.  
Mayfair 1-1710

## FOR SALE

One used Bergan Pallet Cleaner, complete with three (3) complete sets of Star Wheels. \$1000.00 F.O.B. Napa, California.

BOX N-98, ROCK PRODUCTS  
79 W. Monroe St. Chicago 2, Ill.

## SHOVELS — CRANES — DRAGLINES

Rap City 65 Shovel-Bachhoe-Crane, 1 1/4 yd. Diesel. N-W Model 6' 1/4 yd. Diesel Shovel.  
Northwest 80-D Diesel Shovel 3/4 yd. New 1952.  
Lorain L-820 2-yd. Shovel-Drag-Crane 160' hm.  
Lima 1201, 3 1/2 yd. Diesel Shovel.  
Manitowoc 2500, 2 1/2 yd. High Lift Shovel.  
Rise-Rite 54-B Diesel Shovel, 3/4 yd.  
Manitowoc 2500 Dragline, 1 1/2 yd. boom, new 1958.  
Northwest 25 Diesel, 3/4 yd. Shovel.  
Lima 604 Bachhoe-Crane-Drag, Cat. D10000 Diesel.  
Lima 604 Drag, Diesel, 65' hm; New 1954.  
N-W 65, Drag, New 1951, Murphy Diesel 60' hm.  
N-W 6, Crane-Drag, New 1951, Murphy Diesel.  
Koching 605 Shovel-Crane-Dragline Cat. D10000

## CRUSHERS

JAW: Ames 10x20, 14x26, 14x32, 10x20, 16x32, 12x25, 20x40, Regis 30x36, Diamond 24x36, Cedar Rapids 10x20, 20x30, 20x40, Farrell 10x20, 18x30, 14x28, 18x36, 30x48, Buchanan 30x42, Good Roads Rollane 15x30, Traylor 15x30, 34x50, Allis-Chalmers 20x16, Good Roads 16x26, Telesmith 12x22, Traylor 48x20, 42x48, Allis-Chalmers 42x48.  
Allis-Chalmers Model 322, 6' 7 1/2" x 8, 9, 9K, 10, 20, 30 and 36" Telesmith 28, 28", Intermec, 30" Gyrator, Kennedy Van Sled, 19, 25 1/2, R, 31 1/2, 38; Traylor TY 1 1/2", 36", 4' Type TB.  
ROLL: Cedar Rapids 40x20, Poliner 40x22, Pioneer 30x18, Telesmith 24x18, Pioneer 30"x18", New Holland 24x16, Pioneer triple 40"x22" A.C. 69"x16".  
HAMMERMILL: Rise & Williams Jumbo, Poncey-vanias 22x23, Cedar Rapids 20x23, Cedar Rapids 24x24, 30x24, 30x40, Penn EXR-100, Cedar Jeffrey 20x23.  
BALL MILL: Hardinge 10'x48", K.V.B. 6'x36" Type M Jaw Scept 2-H 6'x36", Hardinge Connel 6'x36", Colorado Iron Works 6'x6", Marcy No. 64, Hardinge Connel 10'x36".  
ROD MILL: Jackson & Church 4'x10' 10 ton rods, new. Marcy 3x8, 5x12, 6x12.

AUTOCLAVES: Jackson & Church bolted head 50"x60" "Quick Acting" head 50' x 60".  
CONE: Symons 2' and 3' coarse bowl.  
KILNS: 4'x12", 6'x30", 6'x50", 6'x40", 7'x110' 10'x195.

DRIERS: Vulcan 6'x150", others 7'x30", 6'x50", 7'x70", 6'x40' and Cedar Rapids 60"x24".

## CRUSHING PLANTS

Cedar Rapids "Fitmaster" port. washing-screening Cedar Rapids Portable Super Tandem, excellent. Austin Western port. Model 101, New 1953. Pioneer 30x5V, crushing, washing, screening. Cedar Rapids 40x23 Port. Secondary, Diesel. Universal Model 800 Port. Gravel Plant. Pioneer Port. 11x50 jaw, 40x20 rolls. Telesmith Rand-Gravel-Screening, large capacity. Cedar Rapids 4855 hammermill, complete, excellent. Diamond 66, Port. Pym 1036, Secondary 5018.

## CLASSIFIERS

Conveyer 4'x10' sand-dewatering pump and motor. Dorr 5'x20' Rake type.

Dorr 6'x27' Double Rake type.

## CONCRETE PLANTS AND EQUIPMENT

Johnson concrete plant 253 yds. 5 aggr. compl. Cement silos, Corps of Engr. Spec.  
Johnson concrete plant 300 yds. Corps Engr. Spec. 5 aggr. compl. cement silo 2100 bbls.  
Brie Strayer Port. Complete 50-60 yds. hr. Johnson 200 yd. 4 aggr. compl. 200 bbl. cement compl. 1052 bbl. silo.  
B-E 600 bbl. cement bin, 400 bbl. silo.  
Hetzl 100 ton 3 compartment aggr. bin.  
Butler 212 cu. yd. 6 compls. Complete.  
Smith 64-R 2 yd. tilting mixer, 30 HP elec. motor.  
H K 4 compartment aggr. bin, 340 tons cement bin.  
400 bbl. high 400 bbl. ground silo.

## SAND AND GRAVEL HYDRAULIC DREDGES

10' Portable Diesel powered. Complete.  
12' Diesel powered, pontoon mounted. Complete.  
Edwards 8' with cutter, Diesel 10' 4'x18' 5'x9'.  
8' Hydraulic Diesel, On 32'x28' steel pontoons.  
Ames 10' Diesel power portable. Excellent.  
6' portable Diesel complete with cutters, etc.  
8' H-P twin Diesel drive. Complete.

## DERRICKS

American 30 ton Guy Derrick 100' boom, 116' mast.  
American Terry 20 ton Guy Derrick, 100' boom.  
Guy Derrick, 15 ton, 115' mast, 100' boom.  
American 35 ton stiff leg derrick, 89' boom.  
Rpetal 35 ton stiff leg derrick, 100' boom.  
Nat'l Bridge 30 ton Guy Derrick, 100'.  
American 30 ton stiff leg, 100' boom.

## SCREENS

Diamond Model D1W3 3 deck 4'x12".  
Robbins Gyrex 5'x10' double deck.  
Tyler Model F 360 (300) 4'x12' double deck.  
Simplicity 6'x10' four deck.  
Symons 4'x14' double deck.  
Tyler 4'x10' two deck heavy duty, motor, Gen. Bat.  
Telesmith 5'x12' dbl. deck elec. motor.  
Cedar Rapids 4'x12' dbl. deck elec. motor.  
Pioneer 4'x12' 2 1/2 deck elec. motor.

## RICHARD P. WALSH CO.

80 Church St. New York, N. Y.  
Cortland 7-0728 Cable: RICHWALSH

## I-R Quarrymaster Drill

2—500' Compressors 40" steel—6"

Hole. About one year service.

Practically like new.

## FRANK SWABB EQUIPMENT CO., INC.

6213 Hazelton Nat'l Bank Bldg., Hazelton, Pa.  
Gladstone 5-3658

### QUARRY EQUIPMENT

Pioneer 3042 primary crushing unit with feeder, etc.  
Cedarapids 3240 primary crusher. New Condition.  
Cedarapids 4033 hammermill secondary unit. Rebuilt.  
Cedarapids 4033 hammermill. Rebuilt.  
Cedarapids 2033 hammermill.  
Williams 20" pulverizer.  
Austin-Western 15x24 jaw.  
Cedarapids 45" x 18' apron feeder.  
Cedarapids 4' x 12' double deck screen.  
Niagara 3' x 12' triple deck screen.  
Cedarapids 3' x 8' double deck screen.  
16 cu. yd. Cedarapids sand drag. New.  
New 13" x 35" inclined open elevator.  
60-ton, 5-comp., 8' x 18' storage bin with clam gates.  
Special bins to your specifications.  
Conveyors—18", 24", 30", 36". Also belting.  
18" dia. x 20" face magnetic pulley.  
48" TelSmith Sand Tank, New.

### SHOVELS AND CRANES

Lorain 820, 2-yd. diesel shovel, crane, drag.  
Brownhoist 1-yd. gas shovel-crane.  
Lorain MC-414 20-ton truck crane.  
Lorain MC-254-W 17½-ton truck crane.  
Lorain TL 30 4x2 self propelled.  
Speeder Model 60 Shovel, Hoe, Clam.  
Unit Model 614 diesel backhoe.  
Unit Model 614 Gas backhoe.

### TRACTOR, TRUCK, SCRAPERS, ETC.

3—Eucled rear dumps, 22 ton. Good condition.  
2—Cat DW10 scrapers. Good condition.  
1—Cat D-7 with bulldozer blade.  
1—Allis-Chalmers HD-19 crawler with Carco blade.  
1—Allis-Chalmers HD-10 with Baker bulldozer.  
1—Int. TD-18 with Bucyrus-Erie bulldozer blade.  
1—Int. TD9 w/front shovel attachment. Reconditioned.  
1—Woodridge 15-18 yd. Model TCR scraper.

### DIESEL POWER UNITS

Caterpillar D7700, 63 H.P. @ 1000 RPM. Rebuilt.  
Caterpillar D18000 6-cyl. diesel engine, Twin Disc clutch, extended shaft, outboard bearing, 145 H.P. @ 1000 RPM. Rebuilt.  
Caterpillar D17000 8-cyl. diesel engine with Twin Disc clutch, 190 H.P. @ 1000 RPM.  
GMC 6-71 diesel engine radiator to and including clutch, 130 HP @ 1600 RPM. constant duty, electric starting equipment. New condition.  
GMC 12-cyl. twin diesel engine complete from radiator to and including automotive type clutch with gear reduction unit, fabricated base, electric starting system, 200 H.P. @ 1200 RPM. New Condition.

### ASPHALT PLANT

Barber-Greene Model 848 with drier, gradation unit, etc.

### AIR COMPRESSORS

500 Cu. ft. Gardner-Denver diesel, rebuilt.  
868 Cu. ft. Gardner-Denver diesel, rebuilt.

**L. B. SMITH, INC. Camp Hill, Pa.**

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### SURPLUS EQUIPMENT

Available throughout the U.S. — Items you need may be available near you. Your inquiries would be appreciated.

Buildings	Derricks	Loaders	Pavers
Bins	Draglines	Locomotives	Rollers
Barges	Ditchers	Shells	Shovels
Bucket	Dredges	Mixers	Screens
Belt	Drills	Engines	Shackles
Cableways	Excavators	Machine tools	Tanks
Cars	Feeders	Graders	Trailers
Compressors	Generators	Pumps	Etc., Etc.
Crushers	Kilns		

(I can sell your surplus equipment)

**ALEX T. McLEOD**  
MARIETTA, KANSAS

### SPECIALS

1—Allis-Chalmers 8'x7'x22' two compartment mill and motor.  
2—New 6½" x 150" Kilns.  
1—Complete Lime Hydrating Plant.  
1—6 Williams Jumbo hammermill.  
1—28" TelSmith Intercone Crusher.

### KILNS

1—4' x 40', 9' x 180', Kilns.

### DRYERS

1—4½' x 30', 7' x 60', 8' x 125'.  
1—30" x 20' Louisville Steam Tube Dryer.

### CRUSHERS

1—36" x 42", 20" x 36", 24" x 36", 18" x 36", 12" x 24" Jaw Crushers.  
2—42" x 16" Allis-Chalmers Crushing Rolls.  
1—48" TelSmith Gyraseph crusher.  
36" x 16 rebuild Sturtevant rolls.  
2—24" x 14" Rogers Iron Works Crushing Rolls, Rebuilt.  
1—24" x 12" Farrell Bacon Crushing Rolls.  
1—6", 10", 16" and 20" McCully Superior Gyrratory Crushers.  
No. 3 up to No. 12 Gyrratory Crushers.

### BALL, ROD & TUBE MILLS

1—7'x8', 6'x12', 5½'x10, 8'x6" Ball Mills.  
2—5'x16'; 1—5½'x10" Rod Mills.  
2—5½'x20", 6'x22", Tube Mills.  
2—6'x22" Compeh Mills—6'x22" Tube Mills.  
3—3-Roll Bradley Hercules Mills, Direct Connected to 300 HP Motors.

### MISCELLANEOUS

1—14' or 6' Air Separators.  
1—6'x4', 12'x10' Oliver Filters.

We make new dryers and kilns.

Have you any machinery that you want to sell?

**W. P. HEINEKEN, INC.**

50 Broad St., N. Y. Tel. Wh. 4-4236



### HAISS MODEL 80W BUCKET LOADER

5 Cubic yard per minute loading capacity

4-Wheel Drive  
Hydraulic boom control  
Fully Reconditioned

Price Reduced for Quick SALE!

Write, Phone or Wire

**N. P. Nelson Iron Works, Inc.**

850 Bloomfield Ave., Clifton, N. J.

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Lancaster 6" dia. Vert. Mixer 25 HP.  
Kent Model #3 Continuous Mixer.  
Abbe 27" x 30" Ball Mill Chrome-Mang. lined.  
Raymond #08 and #1 Pulverizers  
Kilns, Dryers, Filters, Hammer Mills, Crushers.

SEND FOR COMPLETE LISTINGS.

**STEIN EQUIPMENT CO.**

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Tel: Sterling 8-1944

### KILNS—DRYERS—COOLERS

1—8' x 125', ¾" shell.  
4—7' x 110', 9/16" shell.  
1—7½' x 7' x 125' ½" shell.  
1—7½' x 20' Link Belt, Refo-Louvre.  
2—6' x 74', ¾" shell.  
2—7½' x 20', 5/2" x 20' Link Belt, Refo-Louvre  
1—6' x 40', ¾" shell.  
1—5' x 67', 5/16" shell.  
1—5' x 40', ¾" shell.  
1—5' x 30', ¾" shell.  
1—4'6" x 50', ¾" shell.

### CRUSHERS—PULVERIZERS—MILLS

2—Allis Chalmers 10" Superior McCully.  
1—Allis Chalmers 8-9 Gates Gyrratory.  
10—Jaw Crushers 5"x6" to 42"x48".  
2—Pennsylvania #5XR-100, 100 TPH.  
3—Hardinge 5'x22", 6'x22", 10'x48".  
3—Patterson 6'x8" Ball Mills.  
1—Raymond #40 Imp.  
1—Williams #20 H.O. Slugger Hammermill.  
2—A.C. 6'x22" Tube Mills, 300 HP motors.  
1—Allis Chalmers #8722 Compeh Mill.

### SCREENS—SEPARATORS

1—Tyler Hammer Screen 4'x7'.  
1—Link Belt 3'x8' double deck screen.  
5—Rotech 40"x84", 40"x120".  
4—Air Separators 6', 8', 10', 14".

### MISCELLANEOUS

2—Chicago 14"x7" Compressors, 434 sfm.  
2—Oliver Rotary Dewaterers 8'x4'.  
12—Bucket Elevators 20' to 75' centers.  
250 ft. Link Belt 12" Troughing Conveyor.  
1—10,500 gpm Centrifugal Pump 135' head.

### Partial List

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### BUCYRUS-ERIE 54B

#### 2½ yd. SHOVEL FRONT

This attachment, only, in "Like New" condition.

New machine guarantee.

**\$11,500.00**

### BUCYRUS-ERIE 38B

#### 1½ yd. SHOVEL FRONT

Shovel front in operating condition.

Price

**\$3,000.00**

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**H. O. PENN MACHINERY CO., INC.**

140th Street & East River  
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### FOR SALE or RENT

35 ton Davenport Gas Locomotive 1942.  
50 ton Whitcomb Diesel-Elec Locomotive.  
140 HP Christian 2D Diesel Hoist & Swing.  
10 ton Unit #1020 Mobile Motor Crane.  
25 ton Ohio Diesel Loco Crane 1947.  
25 ton American Steel Guy Derrick.  
30 ton Steel Stiffleg Derrick & Hoist.  
100 HP Lucey Portable Firebox Boilers.  
2½ yd. Manitowoc 3500 Diesel Crane 1948.  
3½ yd. Lima 1201 Shovel-Dragline.  
5 yd. P&H 1400 Diesel Shovel 1950.  
2200 CFM C-P OCE Air Compr. 350 HP.

**Mississippi Valley Equipment Co.**

513 Locust St. St. Louis 1, Mo.

# BONDED EQUIPMENT BARGAINS

IMMEDIATE SHIPMENT FROM OUR FACTORY

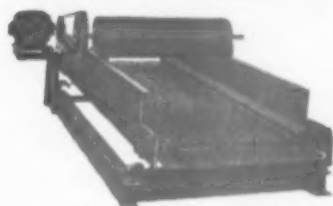
— WRITE, WIRE OR PHONE

## NEW BONDED® HEAVY DUTY VIBRATING SCREENS



Model Number	Screening Area	No. of Decks	Sale Price
124AS	2' x 4'	1	\$ 355
224AS	2' x 4'	2	375
126AS	2' x 6'	1	375
226AS	2' x 6'	2	395
136AS	3' x 6'	1	495
236AS	3' x 6'	2	585
336AS	3' x 6'	3	815
138AS	3' x 8'	1	575
238AS	3' x 8'	2	695
338AS	3' x 8'	3	845
138BS	3' x 8'	1	1119
238BS	3' x 8'	2	1165
338BS	3' x 8'	3	1250
248BS	4' x 8'	2	1495
348BS	4' x 8'	3	1850
2410BS	4' x 10'	2	1775
3410BS	4' x 10'	3	2095
3412BS	4' x 12'	3	2395

## NEW BONDED® GENERAL DUTY VIBRATING SCREENS



For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, de-watering. Made in all metals including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry. **HEAVY DUTY MODELS, TYPE BS:** 4-bearing positive throw, eccentric shaft; 3' x 8' to 5' x 14', 1 to 5 decks. **GENERAL DUTY SCREENS, TYPE AS:** eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4' to 3' x 8'. Write for new 8-page Bulletin 1086 and 1087.

BONDED CARRIES LARGE STOCKS OF SCREEN CLOTH FOR IMMEDIATE SHIPMENT

## NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Complete Ready-Fab sections quickly and easily joined together on the job. We take our loss on our stock of short length belting. You can save as much as 50% on the BONDED CONVEYOR SPECIALS listed, with conveyor belting in two pieces. Conveyors are equipped with 5" roll diam. idlers and return rolls 20" diam. head pulley and 16" diam. tail pulley mounted on 2 1/4" or 2-7/16" diam. shaft. Belt is new 4-ply, 28-oz. duck, 1/4" top rubber cover x 1/32" bottom cover and is fresh stock made by leading manufacturers.

Remember, You Save Up To 50%



CONVEYOR PRICES INCLUDE BELTING

Belt Width	Length of Conveyor	List Price	Sale Price
14"	25'	\$1166	\$ 672
14"	50'	2016	1064
16"	45'	1928	1012
16"	60'	2494	1264
18"	25'	1327	739
18"	45'	1986	1085
18"	85'	3466	1798
20"	25'	1366	770
20"	60'	2762	1426
24"	25'	1428	835
24"	45'	2227	1237
24"	100'	4425	2339
24"	130'	5624	2995
30"	50'	2669	1504
30"	70'	3576	1971

For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

For 14" belt.....	\$15.66 per foot
For 16" belt.....	16.78 per foot
For 18" belt.....	17.20 per foot
For 20" belt.....	18.95 per foot
For 24" belt.....	20.66 per foot
For 30" belt.....	23.02 per foot

## BONDED CONVEYOR ACCESSORIES

All Bonded Troughing Conveyors (described above) can be equipped with Bonded Accessories or use them on your present Conveyor or Bucket Elevator.



Holdback \$90.00



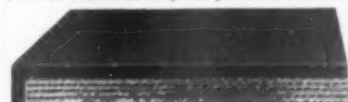
Guide Idler \$13.75



Wing Pulley \$74.00

## NEW CONVEYOR BELTING SAVE UP TO 25%

Heavy duty 4-ply, 28 oz. duck, 1/4" top rubber cover x 1/32" bottom cover rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stock.



Width	List Price	Sale Price
14"	\$3.43 foot	\$2.75 foot
16"	3.86 foot	2.88 foot
18"	4.27 foot	3.19 foot
20"	4.69 foot	3.69 foot
24"	5.55 foot	4.14 foot
30"	6.77 foot	5.06 foot
36"	8.01 foot	6.00 foot

Additional widths and plies available at low prices. Write for free sample.

## NEW BONDED® FEEDERS



For high tonnage and controlled feed of Ag-gregate, Sand, Gravel, Crushed Stone, Clay products, Metallic Ores, Coal, Cinders and almost any other bulk material to Crushers, Screens, Conveyors, Mills and other process machinery. Feeder may also be driven from tail shaft of Bonded® Troughing Idler Conveyors thus eliminating the necessity of two motors. Capacities to 225 tons per hour. Full information in Bulletin 988. Write for it.

Priced from .....\$280.00

## NEW BONDED® FLIGHT CONVEYORS



Heavy Duty Flight Conveyor

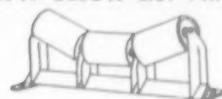


Mounted Mobile Tire Drag Chain Conveyor

Bonded flight conveyors are made in portable and stationary models. Any length. Flight sizes up to 8" x 24". Made of welded structural and sheet steel with heavy duty double guided chain.

Priced from .....\$421.00

## NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE



3-roll, 5" diameter Troughing Idlers for:

14" belt	\$17.25	24" belt	\$19.75
16" belt	18.00	30" belt	20.50
18" belt	19.00	36" belt	21.25
20" belt	19.25	48" belt	23.75

1-roll, 5" diameter Return Idlers for:

14" belt	\$6.75	24" belt	\$ 8.00
16" belt	7.00	30" belt	8.75
18" belt	7.50	36" belt	9.25
20" belt	7.75	48" belt	10.75

All steel. Interchangeable with other well-known makes. Replaceable ball bearings. Either sealed type (pre-lubricated) or with alomite fittings. Maintenance is negligible.

## NEW BONDED® CINDER, STONE, PUMICE, PERLITE CRUSHERS

Bonded double roll crushers are available with Tooth, Smooth, Fine or Coarse Corrugated rolls or any combination of same for crushing Lightweight Aggregate, Pumice, Perlite, Chemicals, Limestone Chips, some Stone and similar materials. Capacities to 500 tons per hour. Write for new eight page Bulletin 1119.



Priced from .....\$479.00

## NEW BONDED GEAR REDUCERS

H.P. At Ratio	H.P. At Ratio	Price
20:1	30:1	
3	2	\$ 81
5	3	142
10	7 1/2	228
15	10	286
20	15	394
25	20	468
30	25	575
40	30	750
60	50	925

Reducers are right angle with worm on bottom (underdriven) and all models are fan cooled by means of a radial fan. Reducer will operate in either direction. Other sizes and ratios available at bargain prices.

VISIT THE BONDED FACTORY ANY TIME

## BONDED SCALE AND MACHINE COMPANY

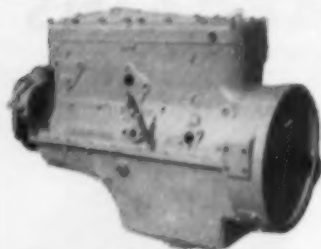
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WRITE FOR FREE CATALOG AND PRICES

Mfgs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders

PHONE: AXminster 1-2213 Evenings  
COLUMBUS 7, OHIO





# HERCULES JXD ENGINES

## U.S. Surplus — \$245.00

Unconditionally guaranteed  
Complete — Less Accessories

### FORBES MOTOR COMPANY

Rt. # 22 (Pgh) Monroeville, Pa.  
Phone VA-4-0100

#### TRANSIT MIXERS

Jaeger 3 Yd. Hi-Discharge, Serial No. 211M-  
J8090, un-mounted, reconditioned @ \$1,500.00  
Jaeger 2 Yd. Hi-Discharge, Serial No. 211M-  
J4580, mounted on Reo Tandem Truck @  
\$1,500.00

Smith 3 Yd. Hi-Discharge, Serial No. 50337,  
mounted on Diamond T Tandem Axle Truck  
@ \$1,500.00  
Hox 3 Yd. Hi-Discharge, Serial No. TD-1651,  
Continental power, un-mounted @ \$1,500.00

#### MISCELLANEOUS

Gallon "110" Used Diesel Motor  
Grader @ \$6000.00  
Pottibone "10" Used 1 1/2 Yd. Tractor-Shovel,  
4-Wheel Drive @ \$7000.00  
American 12-Ton Used Semi Trailer, Single  
Axle @ \$900.00  
Unit Shovel Attachment for Unit "114"  
complete @ \$1500.00  
Inaley "K-12" 1 1/2 Yd. Trench Hoe, Gas  
Power @ \$6000.00  
Barber-Greene "522" Bucket Loader, pneumatic-  
tired @ \$1750.00

Note: Above equipment is in our yard.

130 S. Pierpont Phone 4-6706  
**BIGHAM EQUIPMENT COMPANY**  
Rockford, Ill.

#### EUCLIDS

#### REAR DUMP

Model TD 22-ton.

Booster steering; supercharged diesel  
engine; electric starter, headlights,  
and heater.

### BIRMINGHAM RAIL & LOCOMOTIVE CO.

Birmingham 1, Ala.

#### MOTORS AND GENERATORS

All sizes, new and rebuilt. Starters, acces-  
sories, pulleys and repair parts. Gear mo-  
tors, Falk Shaft mounted Speed Reducers,  
couplings and V-belt drives.

Expert Repair Service

**NUSSBAUM ELECTRIC COMPANY**  
220 E. Douglas Ave., Fort Wayne, Ind.

#### FOR SALE

Jeffrey 54" x 30" Hammermill, purchased 1949.  
Type B3. Excellent condition. Used only as  
standby unit, now surplus. Price: \$1350.00  
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### The Robinson Brick & Tile Co.

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## Save on Your INDUSTRIAL TRACK

**FOSTER  
QUALITY**

**FULLY  
GUARANTEED**

## RELAYING RAILS

Handle more cars better—cost less to  
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Material and Track Accessories.

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## JAW CRUSHERS

60"x48" to 6"x3"

New and used **RELIABLE**



"Farrel-Bacon"  
Jaw Crushers

### BACON-PIETSCH CO., INC.

26 Park St., Montclair, N. J.  
29 Washington Ave., Hamden, Conn.

- 1—50"x50" Pioneer Jaw Crusher.
- 1—48"x42" Farrel Bacon Jaw Crusher.
- 1—30"x30" Buchanan Jaw Crusher, Blake Type.
- 1—24"x24" Telesmith R. B. Jaw Crusher with 3' x 12' Feeder.
- 1—10" Telesmith Gyratory Crusher.
- 1—14" Acme Jaw Crusher.
- 1—14" Telesmith Gyratory Crusher.
- 2—22" Telesmith Gyratory Crusher.
- 1—54" Telesmith Gyratory Crusher.
- 1—16"x16" New Holland Double Roll.
- 1—30"x24" New Holland Rolls.
- 1—74" Alfa-Chalmers Crusher, Blake Type.
- 1—18" Intercone Crusher.
- 1—3" Simmons Cone Cr.
- 1—3'x10" D.D. Telesmith Screen.
- 1—4'x12" S.D. Telesmith Screen.
- 1—60" Telesmith Sand Drag.
- 1—Model 543 Barber-Greene Bucket Loader.
- 6—Ten Huber Roller, Three (3) Wheel.

### BLUE BALL MACHINE WORKS

Blue Ball, Pa.

**ROTARY DRYERS & KILNS:** 10'6" x 105'  
L; 5' x 30'; 4'6" x 40'; 3' x 24'.  
**JAW CRUSHER** 8" x 10"  
**HARDINGE CONICAL BALL MILL.**  
6' D x 22" L.

### PERRY EQUIPMENT CORP.

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Stevenson 4-7210

## New — RAILS — Relaying

All sections available together with all acces-  
sories. Also interested in purchasing surplus  
equipment you may have available.

M. K. FRANK

480 Lexington Ave., Park Bldg.  
New York, New York Pittsburgh, Pa.  
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## DEPENDABLE USED MACHINES

Special:—Lansman loader, hydraulic steer; dual transmission; 52" bucket; used 3 months  
A-W 1/2 yd. gas shovel  
Pioneer port. Diesel gravel plant  
Inaley K-12 dragline  
Pioneer-Mesabi 6x12 d.d. screen  
Northwest truck crane  
Cedar Rapids 16x16 roll crusher  
Unit 1020A dragline  
Bay City 1/2 yd. Diesel backhoe  
60' bucket elevator  
Koehring 1 1/2 yd. Diesel dragline

These machines reconditioned in our newly-built daylight plant. Come see them.

10030 Southwest Highway

TRACTOR & EQUIPMENT CO.

Oak Lawn, Ill.

Dings Crockett Magnetic Separator  
Dings Magnetic Pulley 24x24 Perm. Type  
Allis Chalmers R322, 3/4" throw  
Dodge Lever Type Jaw Crusher 9x15  
Reliance Jaw Crusher 10x18  
Acme Road Mach. Jaw Crusher 10x18  
Cedar Rapids Overhead Ecc. Jaw 15x36  
6—Double Roll Crushers  
5—5' and 6' Pebble mills  
Hummer Type 31 D.D. Screen 6x5  
Deister Plato D.C. Screen 4x6  
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7' x 70' Rotary Cooler  
5' x 40' Dryer, new shell  
36" x 25' Dryer, new shell  
40" x 21' Rotary Dryer, antifriction  
complete with hoods, etc.  
16" Enc. Cont. Elevator, Chain, 55°C  
Barber-Greene 12" Bucket Loader  
Pneumatics, swivel conv.

Apron Feeder 18" x 11'  
Apron Feeder 18" x 5 1/2'  
150"—22" Gravity Conveyor  
Encl. Screw Conveyor 50"x16"  
Encl. Screw Conveyor 45"x16"  
Encl. Screw Conveyor 84"x12"  
69"—36" Trough Idlers 5 roll type  
58"—30" Trough Idlers Misc. types  
106"—42" Trough Idlers, antifriction  
135"—48" Trough Idlers, antifriction  
Rotary Feeder Valves 1/2 to 1 1/2 cu. ft.  
Reducers 1/2 H.P. to 50 H.P.  
18 cu. ft. Dry Mixer with Skip Hoist  
15 Ton Stiffleg, 30' Extension  
42" x 12" Air Tank 1/2" shell  
All sizes Conveyor Belt in stock  
Most sizes Transmission Belt  
Approx. 250 V-Belt Sheaves

### G. A. UNVERZAGT & SONS INC.

136 Coit St. Irvington, N.J.

54" x 70" Bird solid bowl **CENTRIFUGE CRUSH-  
ING PLANTS:** Rogers 120 TPH, Pioneer 40V,  
Unit 880, Diamond 95.  
**CRUSHERS:** 9330 Telesmith, 1020 Allis, 1036 CR,  
1214 Acme, 1524 Unit, 1826 & 2036 CR, 2536  
Telesmith, 3648 Diamond, 4560 Traylor JAW, 1'8"  
& 2'6" Traylor, 16, 20 & 36" McCully, 16D Tel-  
smith GYR, 2 & 3' CONE, 3018 CR DBL. ROLL.  
**MILLS:** 425, 5x10, 6x5 & 8x12 Ball CR #4,  
Jeffrey 2420, Williams 4, 5 & 20 Hammer,  
**DRYERS:** 42" x 20" w/2 shells, 5x30, 5x60, 6x50,  
7x120 & 8x125.  
855 CFM Sullivan motor driven **AIR COMPRESSOR  
SHOVELS & DRAG:** Koehring/1055, Lima 101,  
604, 802 & 1201, Bucyrus 120H, 170B, NW6,  
25, 4019 & 95, P&H 555, 815 & 1055, Marion  
40A, 92, 93M, 300 & 450, Lorain 820.  
Equip here: 100 ton Bin, Viking Pump, 24x23"  
Ball Mill.

Repairs: Bonded Scale and Machine Co.

**MID-CONTINENT EQUIPMENT CO. INC.**  
8321 Cannon Ave. St. Louis 24, Mo.  
Wy. 1-2826

1600 hp Fairbanks Morse marine engine—Wemen #2.  
Mobil Mill—6x7 feeders—62 1/2 grizzlies—230 Wil-  
liams Blunger hammermill—1500 cfm.  
Ingersoll Rand PVE-2 compressor—30 ton outside.  
Overhead travelling crane—American Revolver model.  
R10—30" dredge pump—Gtumsa hoists 100, 150,  
160 hp—7 x 110 kilns—6x4 coolers.  
**JAW CRUSHERS** 8466, 3042, 2450, 2436, 3036—  
**GYRATORY** 16", 20", 30" 36" Sup. McCully—12K  
Gates—Austin 27 1/2"—Telesmith 522—4' Traylor  
78 double reduction—2' 4" Traylor multi-stage re-  
duction—MILLS Allis Chalmers comp 6' x 22"—  
5 x 10, 5 x 14, 8 x 12 rod—5 1/2 x 22 tube—10' x 48"  
Hardinge conical—ROLLS 2416, 3018, 4023—  
**PLANTS** Cedar Rapids Jr. washing, Cedar Rapids  
Jr. Tandem, Pioneer 24 special, Cedar Rapids  
AAAA, 3042 primary, 2025 C. B. primary—**LOGO-  
MOTIVES** 20, 44, 65, 80, tons—45 ton trailer loco-  
motive—**SHOVELS-DRAGS** P & H 855, 955, 1055,  
—NW, 6, 8, 41, 80D, 95—Lorain 820—B.E. 120H—  
Marion 111 M—Manitowoc 3500 & 4500—Monaghan  
9W—Link Belt K-595—Koehring 304 & 601. Many  
other items.

**STANLEY B. TROYER EQUIPMENT COMPANY**  
Box 97 Phone 580 Crosby, Minn.



## WHERE TO BUY

Quarries  
Crushing Plants  
Cement Plants  
Storage Methods  
Operating Costs

### E. LEE HEIDENREICH JR. CONSULTING ENGINEERS

75 Second Street  
Newburgh, N. Y.  
Phone 1828

9 South Clinton St.  
Chicago 6, Ill.  
Ph. Franklin 2-4186

Operation  
Plant Layout  
Design  
Appraisals  
Construction

### WANTED: MAINTENANCE SUPERINTENDENT

Must be familiar with diesel engines, shovels, tractors, crushing and screening equipment, etc. To head maintenance program of Stone Quarrying and Crushing operation. Location: Mid-East. Salary plus Bonus. Please state salary required, experience, when available. First reply.

BOX O-10, ROCK PRODUCTS, 79 W. Monroe St., Chicago 3, Ill.

### PROJECT ENGINEER WANTED

Graduate Mining, Metallurgical, Chemical or Mechanical Engineer, preferably 25 to 35 years old, wanted by medium size progressive heavy machinery manufacturing company, located in South eastern Pennsylvania. To assist in design and preparing for market of various lines of equipment used in mineral dressing, heavy chemical, cement and rock products industries. Must have had engineering and field experience, and be willing to work on drafting board, travel and to do field service. Opportunity also exists for a properly qualified individual, eventually to become sales engineer. Salary open.

BOX N-65, ROCK PRODUCTS, 79 W. Monroe St., Chicago 3, Ill.

#### SITUATION WANTED

by experienced concrete pipe Superintendent, have had twenty-five years experience in the manufacture of concrete pipe Tamp machines packer head—poured pipe also Centrifugal, can also supervise installation of Irrigation lines.

BOX O-12, ROCK PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

#### FOUNDATION TESTING, CHEMICAL ANALYSIS

### CORE DRILLING

THOMASVILLE DRILLING & TESTING CO.  
THOMASVILLE, PENNA.

#### FOR SALE OR RENT—EASY TERMS

#### Rebuilt—A1 Condition

48B Bucyrus Erie Shovel 2 cy diesel Model 6 Northwest Shovel 1½ cy.

WILLIAMS CONSTRUCTION CO.  
Box 143 Murdock 6-6600 Baltimore 20, Md.

#### FOR SALE

Sauerman 1 yd. double drum roller bearing hoist s/n 2066.

1 cement scraper bucket, 3, 16" Sauerman sheaves.

This hoist has only 1,800 hours use.

**GEORGE F. WEAVER**  
Hagerstown, Ill.

Bucyrus 54B, 100B, 120B and 170B shovels. P&H 2½ to 5 yd. shovels. Marion 93M, 111M. 75 & 30-ton 5/16 derriks. Track cranes. Locomotives, diesel, gas, 5-100 tons (19). Cranes, dragline, diesel, elec., 1½ to 18 yds. Crushers: jaw and gyratory, large (8). Rotary dryers, kilns. Euclid trucks. Diesel-electric generators, 400 to 3500 KW.

#### H. Y. SMITH CO.

828 N. Broadway Milwaukee 2, Wis.

#### FOR SALE

One Auger-matic Valve Bag Packer Serial No. 195 Model C. This packer is suitable for any powdered or granular material. It automatically packs and weighs. Original price approximately \$1300.00. Our price after six months use \$650.00. Reason for sale, changing to own bag.

#### ERIE BUILDERS' BLOCK CO.

13th & Myrtle Streets Erie, Pa.

**POSITION WANTED**—Administration in operation or engineering. 17 years experience in the industrial minerals field, of which 10 years were in the Portland Cement Industry. Engineering Graduate, late thirties, now employed. Salary Open. BOX N-61, ROCK PRODUCTS, 79 W. Monroe St., Chicago 3, Ill.

#### WANTED

Chemical Engineer or Chemist for Product and Process development work in research laboratory to Gypsum Products Manufacturer. San Francisco Bay location. Man selected must have research or product control experience on Gypsum Plasters and Board.

List qualifications and salary requirements.  
BOX O-8, ROCK PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

### POSITION WANTED

Superintendent. All phases of Crushed Stone industry. Civil Engineering Graduate.

BOX O-11, ROCK PRODUCTS  
79 W. Monroe St., Chicago 3, Ill.

**GENERAL SUPERINTENDENT** to assume full responsibility for operations and production of wet and dry grinding limestone plant. Experience in cement, pigment and allied fields desirable. Located in Middle Atlantic States. Write giving complete details of education, experience and salary expected, to

BOX O-6, ROCK PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

#### MECHANICAL OR CHEMICAL ENGINEER

to control operations and production of wet and dry grinding limestone plant. Experience in cement, pigment and allied fields desirable. Located in Middle Atlantic States. Write giving complete details of education, experience and salary expected, to

BOX O-5, ROCK PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

**ENGINEER WITH SEVERAL YEARS EXPERIENCE IN CRUSHED STONE AND SAND AND GRAVEL BUSINESS WOULD LIKE TO INVEST IN AND OPERATE A STONE OR SAND AND GRAVEL PLANT.**

BOX O-2, ROCK PRODUCTS  
79 W. Monroe Street, Chicago 3, Ill.

#### WANTED

#480 Marion electric Shovel with Ward-Leonard Control.

**BLUE ROCK, INC.**  
Box 110 Washington C.H., Ohio



### CORE DRILLING

--anywhere!

"We look into the earth"

PENNSYLVANIA  
DRILLING COMPANY  
Pittsburgh 20, Pa.

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#### FOR SALE

**CRAWLER CRANE OSGOOD 200**, with 34' Boom. Excellent Condition. Price \$3750.00.

#### KEN-DICK CORPORATION

1712-15th Street Place  
Moline, Ill. Phone 3-7719

#### WANTED

Men with experience in gypsum industry for supervisory positions at plant in Southern Nevada.

BOX N-83, ROCK PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

#### WANTED

### 42" GYRATORY CRUSHER

The National Lime & Stone Co.  
Findlay, Ohio

#### WANTED

Maintenance Superintendent. Must be familiar with power shovels and stone crushing and screening equipment. Must be capable taking full charge of Machine Shop in Stone Quarrying and Crushing Operation. Location in Eastern State. Please advise experience and salary expected.

BOX N-85, ROCK PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

#### WANTED

2½ to 4 Yard Sauerman  
Cableway Excavator,  
Mast and Hoist  
**LONG CONSTRUCTION CO.**  
Box 1875 Billings, Mont.

#### WANTED

Superintendent for large Stone Quarry and Crushing Operation. Must be qualified to do blasting and to supervise entire operation. Location in Eastern State. Please advise experience and capabilities and salary expected.

BOX N-84, ROCK PRODUCTS  
79 W. Monroe St. Chicago 3, Ill.

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## Slurries...handled at lower cost

The new WILFLEY  
MODEL K Centrifugal  
Sand Pump  
embodies important  
mechanical improvements  
especially  
adapted to the  
handling of cement  
slurry and results in  
stepped-up production  
and substantial  
power savings.  
Individual engineering.  
Write for details.



**WILFLEY**  
centrifugal PUMPS

**A. R. WILFLEY  
& SONS, Inc.**  
Denver, Colo., U.S.A.  
New York Office: 1775 Broadway, N.Y.C.

Buy WILFLEY  
for Cost-Saving  
Performance



## WOVEN WIRE SCREENS

ACCURATE • DURABLE • ECONOMICAL

The reliability of T.C. Alloy Screens has carried them into all parts of the world. Made in Standard and Special Weaves, with Square or Oblong Openings — from 10 mesh, .035" wire on up. Write today for Catalog No. 53.

**TWIN CITY IRON & WIRE CO.**  
35 W. WATER STREET • ST. PAUL 1, MINNESOTA

# Protection

## Under ALL CONDITIONS of Grinding Operation



► Protection requirements vary. That's why Allis-Chalmers control is recommended and applied with expert, personal attention to the specific problem at hand. For example, the starter illustrated is custom-engineered to control a 1000-hp, 2300-volt synchronous motor driving a ball mill. Its protection features not only meet regular operating requirements but also handle unusual emergency conditions. These features include:

- Current-Limiting Fuses
- Thermal Overload Relays
- Squirrel-Cage Protective Relay
- Time-Delay Undervoltage Relay
- Polarized Field Application Relay

For complete information, see your A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

### Optional Features:

Exciter voltage relay to prevent starting when excitation voltage is not available; dc field failure relay to shut down motor on field current failure; instantaneous phase reversal and open phase; inching control for positioning mill.

A-4703



# ALLIS-CHALMERS

GOODYEAR INDUSTRIAL PRODUCTS

**G.T.M. -Specified**

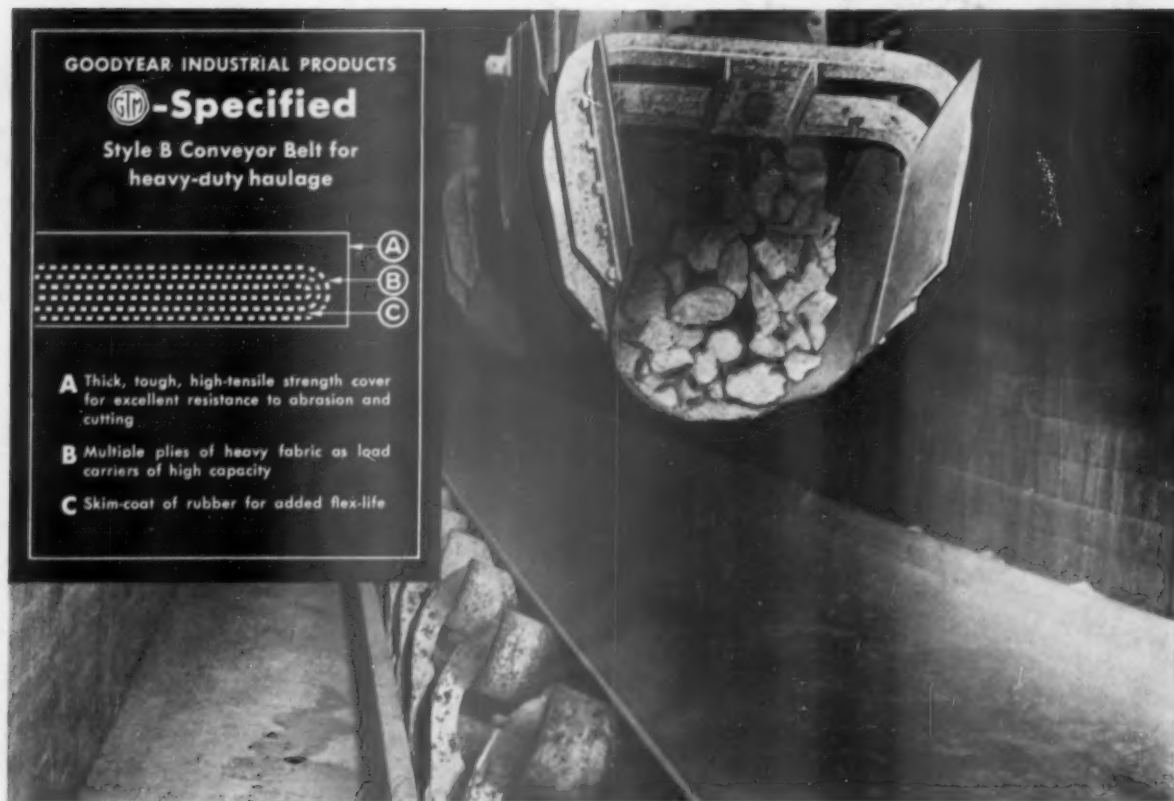
Style B Conveyor Belt for  
heavy-duty haulage



**A** Thick, tough, high-tensile strength cover for excellent resistance to abrasion and cutting

**B** Multiple plies of heavy fabric as load carriers of high capacity

**C** Skim-coat of rubber for added flex-life



## 22 Years' Service

*hauling over 10,000,000 tons of limestone*

**I**N 1930, a Midwestern lime and stone company planned to install a conveyor belt to handle limestone. Of major concern was the beating the belt would take from the sharp, rough stone plus its running in a dark, damp tunnel—a perfect environment for mildew.

To assure the right belt for the job, the G.T.M.—Goodyear Technical Man—was called in. He recommended a rugged, 48"-wide, cotton duck belt, similar to today's Style B (see blueprint) and fully protected with Goodyear Mildew Inhibitor.

**RESULT:** The belt finally was retired after 22 years' continuous service during which it hauled

10,593,965 long tons. Subsequent tests showed its fabric strength to be excellent, while ply adhesion and cover tensile were only slightly below those required on a new belt.

Details on longer service at lower cost from any conveyor belt are available from the G.T.M., your Goodyear Distributor or Goodyear, Industrial Products Division, Akron 16, Ohio.

\* \* \*

**YOUR GOODYEAR DISTRIBUTOR** can quickly supply you with *Hose, Flat Belts, V-Belts, Packing or Rolls*. Look for him in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods."

**CONVEYOR BELTS by**

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